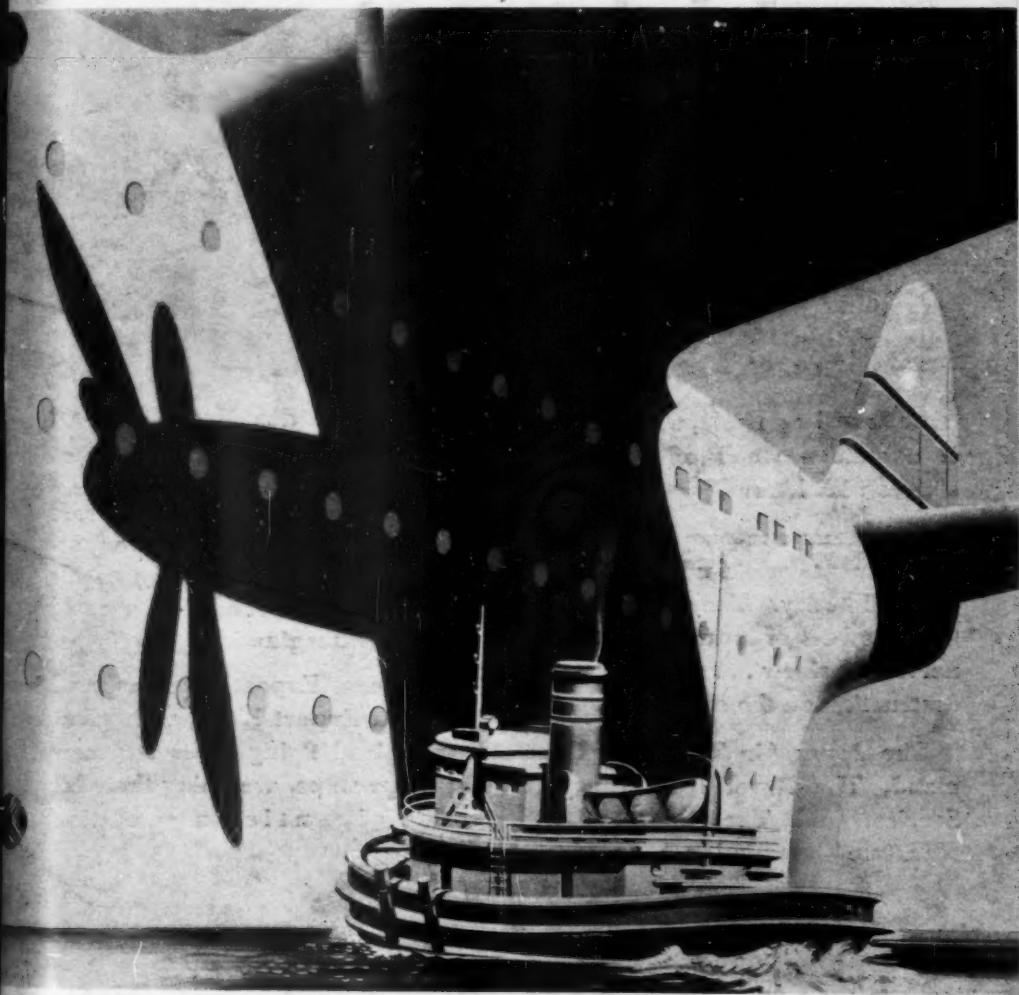


# AIR TRANSPORTATION

of Bus. Lib. ★ ★ AIR CARGO ★ ★ ★ NOV 21 1941  
DOMESTIC • FREIGHT • EXPRESS • MAIL • INTERNATIONAL



TRANSOCEANIC TRANSPORT AFTER THE WAR

Advertising is pointing the way—see page 20

NOVEMBER  
9 4 2

"Keep 'Em Flying"

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COPY  
\$5.00 PER YEAR

# ***The Eagle Strikes***



**T**he American Eagle, when aroused is a sudden whirl of fury as it strikes with killer claws.

The American people and their government are fully, fiercely aroused today. They are fighting this toughest of all wars with every nerve and sinew . . . ready to wreak destruction on the enemy.

The Army Air Transport Command, The Naval Air Transport Service, and The United States Maritime Commission have organ-

ized and are directing the most gigantic transportation job in world history. Due to their combined efforts, the greatest fleets of aircraft and ocean-going vessels ever assembled are now operating to all corners of the globe—on a scale that defies imagination.

American Export Airlines and American Export Lines, with giant four-engined flying boats and new fast cargo ships, are doing their bit in this gigantic transportation effort.

# **American Export**

*Lines  
Airlines*

25 BROADWAY, NEW YORK



**AIR  
TRANSPORTATION**

**NOVEMBER, 1942**

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# ***Ships of the AIR and Ships of the SEA Will Sail Together***

**W**HEN the age of all-out cargo-by-air arrives, the ships of the sea will still be sailing.

For vast though the future of cargo-by-air may be, there will always be the need of the *most economical* means of freight transportation man has ever devised—ships that ride on the water.

The shipping men of America look on the coming of cargo-by-air with no dismay—but with a feeling that a new and powerful partner is about to join them in providing the sinews of reborn international trade.

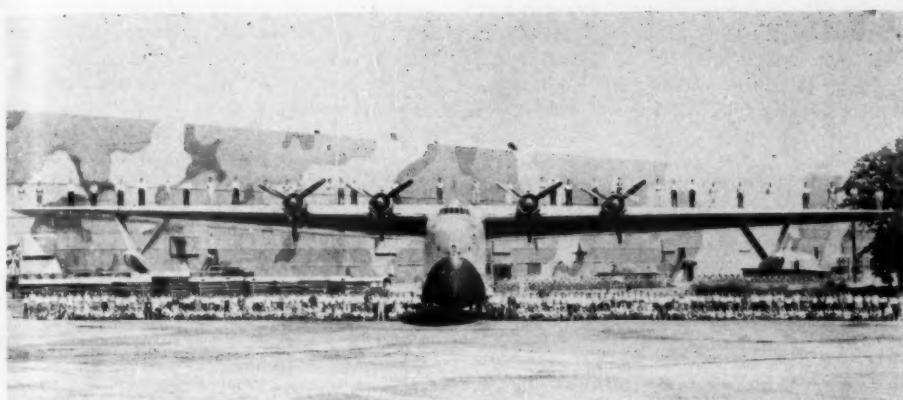
They feel, too, that the true destiny of our foreign trade in the postwar world requires not competition but cooperation, not rivalry but partnership, between these two great modes of transport, in realizing the great new world that will then lie before us.

## **THE PROPELLER CLUB OF THE UNITED STATES**

ARTHUR M. TODE  
Honorary President

CAPTAIN R. C. LEE  
National President





**'MARS' AND HER BUILDERS**—No more striking picture of the great Glenn Martin flying boat built earlier this year for the Navy has been made than this one, with many of her builders posed with her. Thirty-five men stand at six-foot intervals on her 200-foot wing, while 215 others are grouped below the wing.

## 'Mars' Becomes Cargo Ship

### *Glenn Martin's Masterpiece Undergoing Transformation For Navy Transport Service*

THE Navy's giant patrol bomber, *Mars*, largest flying boat in the world [AIR TRANSPORTATION for October], is being converted into an air cargo vessel at the Glenn L. Martin Co., where she has been undergoing tests for several months. When the transformation has taken place, the *Mars* will be turned over to the Navy Air Transport Service.

Long declared the outstanding type available to answer the pressing need of huge air vessels to carry vital materials over oceans, the big Martin ship is being stripped of tactical equipment to make room for bulky, heavy freight. She should be ready "in a short time," President Glenn L. Martin declares.

"The *Mars* has finished her flight tests and has been proved a highly efficient airplane," Martin said. "She is being adapted for a most important function and to assure her even greater efficiency we are installing the latest Wright Cyclone engines of the over-2,000-horsepower-type."

The pioneer manufacturer, whose *China*

*Clipper* and *Philippine Clipper* were the first of the transoceanic air giants, emphasized that the *Mars* has great value both as a combat airplane and as a cargo carrier.

"This basic type, already engineered and needing only minor modification, can be built in quantity to perform either function," he told AIR TRANSPORTATION. "Built especially as cargo ships, these vessels would have a considerably greater gross weight than the 140,000 lbs. of the *Mars* in its rôle as a patrol bomber. Turned out as combat airplanes, they can be heavily protected with armor and armament and can strike fearful blows at enemy ships and installations."

The *Mars*' conversion constitutes one more spectacular step the Navy is taking to assure best delivery of materials to distant forces. Recently it was announced that a cargo version of the Martin PBM-3 patrol bomber was being turned out in numbers, and other airplanes have been adapted to help build up transports capable of setting up fast supply lines.

Importance of the *Mars* as a cargo ship has been emphasized often in the last few months, especially during heavy depredations of Axis submarines on surface shipping. Martin pointed out that hardly more than a score of such flying vessels could deliver as much cargo from California to Hawaii in 60 days as a 10,000-ton Liberty ship. Only 343 ships of the *Mars* model could equal the cargo carrying of a typical 25-ship surface convoy, he added, pointing out that such a convoy requires up to a score of naval escort vessels as protection.

"The important consideration in such an operation is that critical supplies and materials are pushed ahead and arrive on fast schedule," Martin said. "Where it takes months for slow surface convoys to reach some of our distant fronts, these flying ships can make it in a few days. The safety factor is another consideration. There has been almost no loss in transoceanic cargo transport schedules since the war began. These ships fly the weather, take cloud cover, and have

wide choice of altitude and routes. Flying boats can land in any protected water, and can even land at sea in emergency."

The *Mars*, whose interior is equivalent in cubic content to a 14- or 15-room house, has a supercharged cabin to allow normal breathing of her crew on long hops, supplanting uncomfortable oxygen masks at high altitudes. As a patrol bomber, she has a private stateroom for the captain, officers' quarters forward, and crew quarters aft, as in a Navy surface ship. Two messes, two shower-baths, a wardroom for officers, and recreation space for the crew also are included in the big ship's facilities.

Her flight deck is equivalent in size to the entire interior of an average 21-passenger airliner. Her crew can walk into the wings and service the four engines in flight. Her equipment includes a collapsible motorboat and she is able to hoist her beaching gear aboard and carry it away to establish a temporary base in distant waters.

Such flying ships, Glenn Martin believes, will form the nucleus of a vast merchant marine of the air when victory has been won. But his engineers already have a design for a 250,000-lb. ship and are considering another of 500,000 lbs.

"There are no practical limits to the size of flying ships, except the availability of payloads," he concluded.



**NEW MARTIN CONTENDER**—This new Navy air transport has been issuing from assembly line of the Glenn L. Martin Co. "for some time," it has been revealed. It's the Martin PBM-3 transport, 28-ton adaptation of the 24-ton long-range Mariner patrol bomber being turned out for the Navy. Although considerably less than half the size of the mighty *Mars*, largest flying boat in the world, it is 4,000 lbs. heavier than the China Clipper, famed progenitor of transoceanic air leviathans.

# All-Out Air Cargo Starts

## First Domestic All-Cargo Service Inaugurated for U. S. Shippers By UAL, EAL and American

IT'S here.

All-cargo air service on two of the nation's four largest domestic airlines is already operating, with a third shortly to launch the same service.

Eastern Airlines has been operating a New York-Miami cargo service for some time. United launched its service from New York to major Pacific coast points on Nov. 1. American is shortly to follow.

"The new services," the *Wall Street Journal* pointed out at month's end, "are purely commercial in character, and quite apart from the military cargo operations of the various airlines . . . operated under direction of the Army's Air Transport Command."

Thus is set up what is certain to be one of the major milestones in air transport history within the U. S., preceded by only two months by the first all-cargo operation in the hemisphere, launched between Lima, Peru, and Balboa, C. Z., by Panagra [AIR TRANSPORTATION for October]. Planes to be used will be the standard and familiar Douglas DC-3 transports, with interior furnishings and fittings, of course, removed and floors strengthened to permit heavier loading.

Thus, for the first time in domestic commercial airline operation, it will be possible to transport up to three tons of freight on a

single flight. Frequent stops for refueling are planned, in order to use up as little of the plane's lifting power as possible for gasoline and permit correspondingly heavier payloads. Significant is the *Journal's* comment, attributed to unnamed airline officials, that "straight cargo operation . . . will be more profitable than passenger."

United Air Lines' "flying boxcar" is scheduled to leave New York's LaGuardia Field at 11:55 p.m. EWT daily for Salt Lake City. There the plane's cargo will be transferred to one of three regular passenger-and-cargo flights branching out for Portland-Seattle, San Francisco and Los Angeles-San Diego.

Astronomical growth in demand for air express service is responsible for the record-making step, as backlog of freight and express have piled up at key airports with no room in crowded combination passenger-and-cargo planes to carry the load.

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## AIR CARGO News & Comment

From the news of the month come these major milestones of CARGO-BY-AIR progress to help bring the picture up to date:

HENRY J. KAISER said as October ended that his mighty new cargo plane, to be constructed on an experimental basis, would be ready for test flights in 18 months. Meanwhile, his company will have prepared plans by which the monster planes (see cover, AIR TRANSPORTATION for October) may be put into mass production soon afterward.

ANDREW J. HIGGINS, the New Orleans ship-

builder who made headlines when he lost a huge Government contract due, it was said, to lack of materials for his monster Louisiana shipyard, entered the CARGO-BY-AIR picture the same day when he was told by WPB that he would receive a contract to build 1,200 Curtiss C-46 Commandos—the Army's highly praised new troop and cargo transport planes (see AIR TRANSPORTATION for October).

THE AERONAUTICAL CHAMBER OF COMMERCE, spokesman for the aircraft industry, announced at about the same time that by the end of

1943 "air transport will approach parity with wartime ocean shipping"—a far bigger claim as to CARGO-BY-AIR'S rapid progress than anybody who is anybody has so far made.

Meanwhile, the OFFICE OF WAR INFORMATION made what the Aeronautical Chamber said sounded far more plausible when it issued an outline of the big quantities of strategic materials for war industry which are now being brought to the U. S. by air. From China are flown silk for parachutes, tungsten and tin for war metallurgy—and in respectable quantities: 70 tons of silk, 47 tons of tin, 70 tons of Tungsten flown from China out to India en route to the U. S. in eight weeks.

From Persian Gulf ports at least \$475,000 worth of platinum has been flown to the U. S. in cargo planes. Other materials being moved or soon to be moved by air include, according to OWI:

Balsa wood from Central America, needed for American glider and British mosquito boats.

Tantalite, beryl ore, quartz crystals, industrial diamonds, and mica from South Africa.

Crude rubber from Brazil.

Twenty tons of rubber seeds from Liberia for planting in the western hemisphere.

Proudest boast of all from OWI, the Board of Economic Warfare and the Army and Navy: "*Not a pound of cargo has been reported lost to date.*"

AVIATION AUTHORITIES are seeing in a recent Government decision a good omen for the future of air cargo transport. Following a survey by the War and Navy departments to determine whether the Civil Aeronautics Administration should be "militarized," it has been decided that it retain its civilian status in the Department of Commerce.

WILLIAM F. MCGRATH, longtime transport executive who is now Eastern regional manager of Transcontinental & Western Air, Inc., got himself another important post late last month. He's the new president of Air Lines Terminal Corp., company which runs Manhattan's big new terminal at Park Ave. and 42nd St., opposite Grand Central Terminal.

W. S. Green, manager of the passenger and cargo department of American Export Airlines, was chosen vice-president of the terminal company.

## American's New Guide A Hit With Shippers



Walter Johnson, assistant manager of mail, express and freight for American Airlines, explains the "Air Express and Air Freight Shippers Guide" to the field superintendents of the department. This Guide is believed to be the first one of its kind in air transport history and was developed by the airline because of the increasing demands upon the air express service resulting from the war effort and to acquaint traffic managers and shipping depart-

ments with the technical requirements of air express service.

Along with the presentation of the guide the airline is devoting the efforts of its traffic organization to a service campaign on air express in which representatives are calling on air express users in war industries to discuss with them their shipping problems.

## Even AVG Veteran Must Go to School Again To Be Pan Am Pilot

You may have 10 Jap planes to your credit as a member of the fabulous Flying Tigers of the AVG in China and Burma, but even that record isn't good enough to qualify you to fly one of Pan American's Clippers.

So Ex-Tiger Charles Older found out when he returned to San Francisco. Before going on duty as a Pan Am junior pilot, he had to buckle down to study in Pan Am's own training system, as did also another ex-Tiger, Dick Rossi. Soon, their training perfected, Older will be helping fly Clippers on the Pacific air lanes, while Rossi will return to the Orient to fly for China National Aviation Corp., Pan Am's Chinese affiliate.



**NO FEATHERWEIGHT** items to ship by air is this Westinghouse refrigerator being loaded on a Pan American Clipper. Items of such bulk and weight are routine under today's wartime operations, however. In September, Pan Am set a single-trip cargo (express) record of more than three and a half tons—topping by 700 lbs. the previous weight-trip record set a week before.

## Pan Am's First 15

### *Unobserved Birthday of World's Biggest Airline Points to Its Pioneering of Cargo-by-Air*

“THE airplane is not a freighter,” declared *Fortune*, in reporting on the progress to date of Pan American Airways back in April, 1936. However correct the remark may have been six and a half years ago, and however the editors of *Fortune* might amend it, were they to write on the same subject today, their next sentences almost seemed to contradict the statement.

“... automobile and tractor parts constitute a substantial percentage of Pan American's express tonnage, and this item alone has had

important effects upon U. S.-South American trade. Automobile dealers in the Argentine who can rely upon delivery of parts within five

or six days do not have to carry such big stocks. Their inventories are more liquid and the sale of American cars is stimulated by reason of the availability of replacements.

"The same observation applies to parts for radio sets, ice-making equipment, X-ray machines, and tools of all kinds."

That was, of course, six and a half long years ago—almost an age, as air progress moves. The world was at peace, luxurious passenger transport across the oceans was the great air objective, and the Martin Clippers were soon to take to the transpacific air as the flying wonders of their day—to be succeeded and surpassed in their turn by the great Boeing 314's which are the Atlantic Clippers of today.

## A 90-Mile Line in 1927

Between that far-off date and the day when the Jap swooped down on Pearl Harbor, a lot of Pan American progress flowed by under the wings of the Clippers—none of it more vital than the progress in carrying cargoes, as well as passengers, by transoceanic air routes.

Pan American Airways System on Oct. 19 celebrated the 15th anniversary of the worldwide air transport system now dedicated to the war effort. From an "international" run of only 90 miles between Key West, Fla. and Havana, Cuba, started on Oct. 19, 1927, Pan American has grown to a system of almost 100,000 route miles.

The system was carrying on far-flung operations in Alaska, in and around the continent of South America, in the Caribbean, across the Pacific and Atlantic, and in the Far, Middle and Near East on Dec. 7, 1941.

## Pioneered Multiple Crews

Aside from its contribution to the war as a transport system providing vital communication to many corners of the globe, Pan Am has pioneered in developing the technique of over-ocean flying, including use of the multiple-crew (captains and pilots buttressed by navigators, flight engineers and radio operators). The multiple crew system is reflected now in the operation of wide-ranging American military airplanes and in supplementary over-water transport operations undertaken by other agencies at the Government's request.

Pan Am also pioneered the development of large, multi-engined ocean-going planes by placing orders with the U. S. aircraft industry

for such aircraft.

Major steps in Pan American history since Oct. 19, 1927, have included: (1) Pioneering flights and service established over the Caribbean; (2) service around and within South America; (3) establishment of regular routes in Alaska in 1932 and linking of Alaska with the U. S. in 1940; (4) establishment of regular Pacific service in 1935, followed by service to New Zealand in 1940; (5) establishment of the first transatlantic route in 1939; (6) establishment, just prior to U. S. entry into the war, of a trans-South Atlantic line to Africa and a land-plane line into the interior of Africa at the Government's request; (7) setting up and operating special centers for instruction in the technique of long-range flying, as an aid to the war effort.

In the company's 15 years its planes have transported about 2,350,000 passengers and flown 161,000,000 miles.

## Express Began in Mexico

One of the outstanding accomplishments of Pan American Airways during the last fifteen years has been the development of air express. Express service, inaugurated in Mexico in 1929 by Compania Mexicana de Aviacion, Pan Am. subsidiary, has shown tremendous growth, especially since December 7 of last year.

But real development of Pan Am's international air express dates from August, 1934, when the network was linked with the domestic air express system of Railway Express Agency, which gave more than 23,000 express stations in the U. S. facilities for shipping anywhere in the U. S. to any point in the Pan American system. At the same time an airwaybill was inaugurated which did away with much red tape about which shippers complained.

Original express rates were high, but were quickly reduced in the summer of 1931 after Pan Am had acquired experience in express. Some typical examples of the reduction:

Destination	Original Pound Rate	Present Pound Rate
Puerto Rico	\$1.25	.53
Trinidad	2.00	.79
Rio de Janeiro	6.05	1.50
Canal Zone	2.00	.76

Among the first commercial shipments in 1931 was that of the movie *Ben Hur*. A print had been destroyed by fire in Rio de Janeiro and a replacement was needed in a hurry. In that year the film companies also started send-



**THIS IS A FREIGHTER**—In Lima, Peru, freight is loaded by Pan-American-Grace Airways employees aboard one of the first two all-cargo airliners in regular commercial service in the world. The all-cargo Panagra line connects Lima with Balboa, C. Z. Starting in August, the line carried 80,000 lbs. of cargo in its first two and a half months—15 tons of it in a single record week. The planes are converted Douglas DC-2's.

ing newsreels by air to South America. Other shipments at that time consisted of replacement parts for mining machinery, auto parts, airplane parts, serum and baby chicks.

Due to special conditions imposed by the war, transatlantic air express service was not instituted until September, 1941, when service was started to Lisbon. Pan Am was prepared to offer facilities in the fall of 1939, but the start of the war entailed tremendous demands upon passenger space, causing delay in express service. There were many difficulties on account of wartime regulations which resulted in the coinage of the word "aircert"—designed to perform in air transport what the "navicert" did with marine shipments.

### War Express Volume Soars

Since Dec. 7 the volume of air express shipments has grown enormously. In addition to ordinary business, already large, throngs of shippers, who heretofore had used ships, came to Pan American because of the limited number of sailings to the West Indies and Central

and South America. Many shippers even felt it was not necessary to insure against war risk goods shipped by Pan American, though those who did could obtain such insurance for from  $\frac{1}{4}$  to  $\frac{1}{2}$  of one per cent, according to the distance. Heavy war risk insurance by steamer plus increased rates put into effect by steamship companies produced, in many cases, higher charges by steamer than by air. In addition, shippers felt that they were surer of their goods reaching their destination, when they shipped by air.

On the Pacific there now are practically no commercial shipments as everything is for the Government. The express department at the LaGuardia Field clipper base also has been greatly expanded, and 11 men are now required against one or two last fall. Large quantities of commercial shipments have been carried to Bermuda due to the fact that there are few steamers operating there. More than five tons of express is now carried on some trips, while before Dec. 7 shipments mostly involved small and novel articles, such as newspapers, baby chicks outbound and Bermuda lilies homeward, as well as some cases of Swiss watch parts from Lisbon.

Many a strange item now passes through New York's marine terminal. Samples: contraband jewelry seized from steamers; labels for shipping food and clothing to war prisoners; live leeches for treating eye injuries; human blood plasma; yellow fever vaccine. Last month, \$30,000 shipment of 426 gleaming quartz crystals (for radio transmitters) arrived from Brazil.

Spread out for inspection, the big, heavy (some weighed 20 lbs.) crystals gave Pan American's shipping room an Alice-in-Wonderland appearance.

The Alaska division, on which through service started from Seattle on June 20, 1940, also has been one of the busiest since Dec. 7, due to the enormous load of military supplies for bases in that territory. Business to Alaska has increased to such an extent that recently it became necessary to put an embargo on commercial shipments on that route also, when not covered by priority. Pan American's Chinese affiliate, CNAC, has also been transporting an enormous amount of goods. During 1941 it carried 895,046 lbs. of air express.

### ***Vast Growth Is Charted***

The remarkable growth of Pan Am's entire express traffic is shown by recalling that in 1930 the system carried 12,156 lbs. which increased to 135,745 lbs. in 1931, while later years look like this:

	<i>Number of Shipments</i>	<i>Weight in Pounds</i>
1938	243,479	3,585,939
1939	283,878	4,416,045
1940	535,506	5,557,794
1941	679,312	7,518,473

Domestic air express service carried by Pan American in South America has also grown tremendously. Total poundage in 1941 was 5,533,190 as compared with 4,417,404 in 1940, an increase of more than 25 per cent.

In August 1942, Pan American-Grace Airways inaugurated the first scheduled commercial all-express service by an international air carrier certified by the Civil Aeronautics Board [AIR TRANSPORTATION, October]. Service was started on Panagra's trunk line from Balboa to Lima, Peru. With it backlog at Balboa of non-priority commercial shipments, representing in many cases machinery, tools and commodities urgently needed in the West

Coast republics were reduced, while a flow of valuable raw materials was established north-bound. By means of this special service, Panagra has transported nearly 80,000 lbs. of express south of Balboa in two and a half months. In the course of a single week Panagra carried more than 30,800 lbs.—over 15 tons of cargo originating in the U. S., from Balboa to the west coast of South America and to Argentina.

Though 10 years of navigation aids were completely wiped out when the first bomb fell on Hawaii, though the U. S. is geographically isolated by the world's two broadest oceans, U. S. communication and transport lines with the Far East and with Europe have not been broken.

In carrying out Pan Am's war work, the Clippers have weighed anchors in ports of every continent on the globe. In their dark camouflage paint they have spanned all of the oceans south of the North Pole and north of the South Pole. They have made records which have been sensational.

### ***Africa 'Opened' in 61 Days***

The African route which would ordinarily have required two or three years to construct was placed in operation just 61 days after it was requested by the President of the U. S. an achievement made possible only by amassing 7,000 trained men for the job.

In the evacuation of Burma, Clippers carried some 3,500 refugees from hidden fields behind the combat lines north of Mandalay to the safer shores of India's Brahmaputra River, brought nearly 8,000 lbs. of medical and combat supplies for allied troops in Burma.

Clippers' payloads since Dec. 7 have been increased by almost a ton and cruising radii extended to more than 4,000 miles by the complete stripping of furnishings, equipment and paint.

More than 600 major overseas flight assignments for the war effort have been completed, and 10 transatlantic captains have logged six transatlantic flights in less than 15 days.

Back in August, a shipment of 300,000 doses of sulfadiazine was Clippered from the U. S. to stem an epidemic of meningitis in Chile. Early in September, another similar shipment carried 600 lbs. of medical supplies for the Red Cross in Haiti, supplies badly needed to replenish stock that had fallen below normal



**RED CROSS SUPPLIES** for Europe are a vital part of Pan American's priority-governed transatlantic traffic during the war. These boxes are being loaded at La Guardia Field, bound for the American legation in Lisbon, Portugal.

standards at the Port au Prince headquarters because of the need to care for numerous injured survivors from ships torpedoed by Axis ships in the Caribbean. President Elie Lescot of Haiti had sent a hurried call to Pan American's Miami base where priority was immediately obtained, shipment and delivery made within a few hours.

### **Argentina Displays Proof**

In August, too, there was more evidence of Pan Am's air cargo progress. This time the evidence was from the Argentine, where Harrod's, Buenos Aires' biggest department store, staged an exhibit of air-transported merchandise with Pan American's cooperation. Shown were many products regularly carried by Pan American and Panagra to nations outside the Argentine in an active exchange of new manufactures to help stimulate the diversification of Argentine industry. Among the items exhibited: woolen yarns, shoes, hats, liquors, novelty jewelry, canned evaporated milk, drugs and medicines.

While the argument for this type of cargo ship waxed furiously among the experts, Pan American's cargo-carrying Clippers

were steadily flying all over the world with larger and larger loads. Recent transpacific shipments alone indicated how swift this cargo trend was progressing.

Because of the increase in vital materials shipped to the war zones, an enormous rise in cargo weight was accompanied by a sharp reduction in the number of individual items handled, i.e. packages are fewer but much larger and heavier.

Definitely, air express for articles of peace times had changed to **AIR CARGO**—for war today, for peace in the future.

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### **UAL's Express Cargo Up 152 Pct. Over 1941**

Air express flown by United Air Lines increased 152 per cent over 1941 in the first nine months of this year, declares C. P. Graddick, United's express-mail-freight director. The nine-month total was 5,414,119,119 express pound-miles as against 2,151,687,985 for the corresponding 1941 period. The figures do not include the substantial cargo loads being flown by United under government contract.

# **Ships and Planes Should Combine Operations**

***Postwar Progress Demands  
Joint Services, Contends  
American President's Grady***



**HENRY FRANCIS GRADY** came to his present post from a career whose distinction is exceeded by few in American industry or transport. Starting as a lecturer at the College of the City of New York, and at Columbia University (where he won his Ph.D in 1927), he joined the bureau of planning statistics of the U. S. Shipping Board in March, 1918 as a special expert.

In 1919-20, he was U. S. Trade Commissioner to London and the Continent, acting commercial attaché at London and later in the Netherlands. After a short stretch as research chief of the U. S. Bureau of Foreign & Domestic Commerce back in Washington, he returned to university life, and from 1928 to 1937 served the University of California as professor of international trade and dean of commerce.

In May, 1937, he was back in Washington as vice chairman of the U. S. Tariff Commission. After two years he was appointed Assistant Secretary of State, serving to the end of 1940, when he assumed his present post at American President Lines Ltd. He served as a member of the League of Nations economic committee since January, 1937. Twice since mid-1941, he has undertaken special missions for President Roosevelt: first to the Orient for an economic survey of numerous countries supplying strategic war materiel, and from March to June, 1942 to India as a member of the American Technical Mission.

*By HENRY F. GRADY*

*President, American President Lines; Former Assistant Secretary of State*

**W**HEN one talks about aviation these days, he had better talk fast: otherwise what he has to say may be out-dated before he can say it.

If I had been asked prior to the outbreak of World War II to present this subject, I would have demurred on the ground that it was appropriate only for a dreamer or star-gazer. What might have seemed utterly fantastic two or three years ago is now accepted as commonplace. Such is the racing tempo with which science and the world move under the stimulus of war.

With 200-foot wing-span planes, propelled by seven 2000-horsepower motors, and capable of carrying 60 to 100 deadweight tons of

freight no longer a draftsman's dream but reported as being on the drawing boards for production, we have sound reason for sober

contemplation of post-war air as well as water transportation.

Unhappily, the stimulus for most of the advancement in air transport has developed under the urgency of man's will to destroy. Unlike rail and water transportation, aviation came first into large-scale use as an instrument of war rather than peace. It was not until the airplane had proved its potentialities as an instrument of destruction in World War I that its application to peaceful pursuits was fully realized. Again today, military consideration is the dominant note in air transport development.

There is every reason to hope, however unhappy and painful the birth and early development of this now adolescent industry has been, that in the years to come it will more than compensate for the grief and destruction it has wrought. Few things in the history of human invention have greater possibilities for public service.

Because our problem of postwar integration of air and water transportation involves the whole field of national and international policy—political, economic and military—it might be well to review the extent to which air transport lines were already established as the world moved into the present global conflict.

Many of these services were known to me personally. During the two missions which I headed for our Government during the past year, one to the Far East to conduct an economic survey of strategic war materials, and the other to India as head of President Roosevelt's advisory mission, I traveled a total of probably 70,000 miles, nearly all of it by air. So I have considerable first-hand information about air transport service, in relation to our own and other countries, and, I believe, to its place in post war reconstruction.

A recent publication of the Council on Foreign Relations, *International Air Transport and National Policy*, gives a detailed outline of the worldwide network of air lines that was developed prior to the war. The extent of this development is truly amazing.

## **Britain Linked with Empire**

GREAT BRITAIN concentrated on developing air routes to various parts of the Empire. The British world lines have run in two main directions: toward Australia and toward South Africa. The route to Australia, after traversing France and Italy, ran through Cairo and Baghdad, along the Persian Gulf, and over India and Burma to Malaya, with a connecting

service from Singapore to Australia and a branch line to Hong Kong.

From Cairo the routes go today to Teheran and Asmara and another branches out to the south and runs through the Anglo-Egyptian Sudan to Durban in South Africa, whence a line operated by the Union of South Africa reaches the Cape. In 1939 a British air service to North America was opened and a service to South America was being planned.

FRANCE developed early a thick network of international air services in Europe and with her colonies overseas. French world air routes ran in three directions: To Indo-China (with an extension to Hong Kong); to West Africa and on to South America; to Central Africa and Madagascar.

THE DUTCH services, in addition to an extended network in Europe, included the first air route to the Far East, the Amsterdam-Batavia line, a service from Java to Australia, and another to French Indo-China. The Dutch prior to 1940 had plans for establishing transatlantic services to both North and South America, and one to South Africa. It was reported also that they planned a transpacific service, connecting the Netherlands East Indies with the U. S.

## **Axis Had Big Planes**

ITALY's air lines until the Ethiopian campaign were confined to Europe and the Mediterranean. With the establishment of the "Empire," however, came the development of an imperial air network which, when the war broke out, included plans for the extension of services to Bangkok and Tokyo and to South America.\*

GERMANY had after World War I no colonies to serve, but it developed a domestic and European network foremost on the Continent, and then conceived many ambitious schemes for air services to all parts of the world. In the direction of South America, a Zeppelin service was organized in 1931 and a plane service in 1934. Domestic lines under German auspices in other countries, as in Central and South America, were to become links in a worldwide system of German air transport.

THE SOVIET UNION has a very extensive system of internal air services. Aside from short

\*Later on a portion of the grandiose Italian Empire plan for expansion by air was carried out, and LATI, the Italian airline, began regular service from Rome to Rio de Janeiro with a flight departing from Rome on Dec. 21, 1939. Later, after Brazil began blacklisting Axis-operated firms, the LATI service was discontinued.—EDITOR.

lines to Mongolia and Afghanistan, Soviet aircraft have operated regular international services to Sweden, Germany, Bulgaria and China.

JAPANESE air transport has followed the Japanese Army to Manchuria and China. Prior to the war Japanese plans contemplated the operation of routes to the Philippines, the East Indies and Australia, in consonance with their ambitions for a southward march of empire, and also eventually to Europe (via Bangkok) and to North America.

AMERICAN hemispheric services have extended across the Pacific and the North and South Atlantic, across Africa, into Central and South America, and to Canada and Alaska. Canadian air transport interests were reported in 1941 to be studying the possibility of establishing an air route to Siberia and the Far East via Alaska.\*

As the world entered this second great war a comprehensive network of international air transport services was already spread over most of the globe.

It has been my personal experience and observation in using many of these transcontinental and transoceanic air lines that they represented a universally high standard of service. With few exceptions their equipment has been modern and up-to-date, and the service rendered not only efficient and courteous but marked at all times by a high regard for the factor of safety. The operations have reflected sound and capable management.

## ***Shipping Fostered Airlines***

It is significant to note here that nearly all of the transoceanic services, including those originating in the Americas, paralleled established *maritime* trade routes and were in some instances affiliated in one way or another with the steamship lines whose sea lanes they paralleled. This was a perfectly logical development for the reason that air and water transportation are naturally and essentially complementary. Each mode has its own province and special function, but *it is my firm conviction that the highest public service is attained where under proper circumstances the two are combined, each working in conjunction with and complementing the other.*

There are certain obvious reasons why this should be so:

1. *Steamship companies for the most part are well established in their respective trades.* The business and goodwill of these companies have been built up over a period of many years. Their connections are of tremendous

value not only in maintaining such trading relations as having existed over the years, but in extending and expanding the commerce that would naturally accrue from any new or improved transport facilities. What is more natural then, or more in the public interest, than to have an air transport system with its specialized limited service working in close co-ordination with a deep-rooted, well established steamship company?

2. *Affiliation with a paralleling steamship line adds immeasurably to the safety factor of flying.* The planned availability of steamers at regular intervals along the course not only may provide succor in case of mechanical difficulties and forced landings, but would be available also to report on weather conditions along the route ahead. The experience of companies operating airships in the past has been that frequent weather observations are necessary not only to make flying more safe but more economical as well through the discovery, by means of theodolite observations, of favorable or unfavorable air currents. Major ocean lines as a rule have many ships spaced along the course of their trade routes and airships receiving day and night observations from such surface craft are better prepared to cope with weather conditions.

3. *Lower-cost operations* for air transport services, which means, of course, lower-cost transportation to the public, would be possible as a result of affiliation with paralleling steamship companies. The old-line, well-established steamship company already provides, through its network of foreign and domestic agencies, the selling organization for the promotion of business, and the facilities for supply, administration and management.

4. *Combined operations would give the auxiliary air arm the advantage of experienced and proven management counsel in a foreign trade field where air transport is new.* Not only would this be true in the matter of more efficient operation, but also in the development of special trade and travel situations, based on long years of experience and "know how."

5. *Combination service of air and water transport would be in the interest of national defense.* Argument is no longer admitted on the scores that the merchant marine is a vital adjunct of the Navy, and that commercial aviation in a national emergency is an equally vital part of military aviation. As an Army man once put it: "The civilian air force is to our military air force what our merchant marine is to our Navy; only more so, because it can combine fighting activities with cargo and transport activities!"

There is ample proof likewise that *sea power and air power are greatest and most effective when they are combined*. If this be true in a military sense why should it not be true in a commercial sense? Warfare may be economic, or commercial, as well as military. Anything that contributes to peacetime operating efficiency of air and water commercial enterprises, each of which is a military auxiliary in its own right, should be a net overall contribution to national defense. For this reason, if no other, air and water transport systems, paralleling each other in world trade lanes, should be combined where feasible and warranted.

### **Winning Foreign Acceptance**

Ocean steamship companies by virtue of long establishment in given trades, offer the air transport carriers an immediate acceptance in foreign markets that would otherwise take them years to acquire on their own account. Shipping companies who have served these nations and communities for years are intimately familiar with every interest and business-getting angle. They have established their own contacts with the Governments and local authorities involved. They know the shippers, consignees, commodities, travelers and sources of commerce.

In the matter of service, we recognize of course that air travel is much faster than water, and that many persons, pressed for time, will choose the air transport over the steamship. On the other hand, there will be those with the problem of health or a lot of leisure, who will seek the comforts and pleasures of a large ocean-going liner. In each case, however, there may be complementing service factors. A business man or a diplomat, on an important assignment, may fly to an overseas destination and then, with his business transacted, want to return home by steamer. A vacationist or tourist might reach an overseas destination by steamer and then be summoned home by a personal or business emergency, in which case air transport would serve him. Public confidence built by a steamship company over the years should be a powerful factor in attracting passengers to any air transport system bearing the company name.

### **Ships Still Have Task**

On the carrying of cargo by air transport, we hear a great deal these days about "flying boxcars" and how all our transportation sys-

tems will be outmoded by new developments in aeronautical engineering. Let me suggest to you that none of us can see very far into the future. There are many inherent problems to be solved before air transport can compete for general and bulk commodities with the cheaper surface systems—land and sea.

What does concern me, however, and very vitally, is whether or not American steamship companies, who in some instances helped to pioneer air lines over their respective routes, are going to be allowed to meet their foreign competitors on an equal footing, and in the public interest improve and advance their present services by using air transport in coordination with their present operations. This, as I have tried to point out, is essential to the public interest on two counts; first, for reasons of national defense, and second, for reasons of national economy, that the U. S. may be able to compete on a reasonably equal basis for its share of the world's commerce. Business, like gold, is where you find it, and we should not be fettered and restricted in our quest for foreign trade.

### **First Class Mail by Air?**

It is entirely possible that first class mail (and perhaps all mail matter), express packages containing commodities of great value, and such precious cargoes whose worth compared with weight could justify higher tariff for quicker transit, will be freighted by air transports. On the other hand, the great bulk of our foreign commerce will continue to be comprised of goods of relatively lower value on which the longer transit would not justify a heavy increase in tariff. Such cargoes and many passengers, as usual, will continue to fill the holds and staterooms of ocean-going vessels.

All of which brings us to a realization that the two types of service, sea and air transport, while operating between the same points and serving in general the same communities and the same commerce, are susceptible of integration into a highly efficient and economical transportation system. Under such conditions they obviously could be made complementary rather than competitive.

If given circumstances—either as to person or commodity—require one type, or can be most advantageously performed by one type, there would seem to be little place for salesmanship, urging or influence. The traveler or shipper would select the mode which is best suited to his convenience and economy, and eventually the two services would settle to a

common sphere of complementation, as a result of which would develop a far greater volume of American commerce and public service than if they went their separate, competitive, and individually more costly ways.

This situation is well recognized by many foreign governments and foreign transportation interests. A number of foreign steamship lines own and operate, either independently or as auxiliary services, air transport lines serving the same communities.

Prior to the outbreak of World War II, the French had their air and water combination known as *Aeromaritime*, which was an inter-colonial service in West Africa. It combined the shipping company, *Chargeurs Reunis*, with an auxiliary air transport service.

In 1937, the French organized a company known as *Air France Transatlantique* in which one of the principal stockholders was the steamship company, *Cie. Generale Transatlantique*.

In the establishment and operation of the projected Dutch transatlantic airline, which was denied fruition by the outbreak of war, a syndicate was formed in which the Holland-America Line, steamship operator, held a large block of stock and planned a leading role in management.

As for Great Britain, it has been announced publicly that Cunard and White Star would interest themselves in acquiring air transport auxiliary services as soon as the war terminates, and several other important British steamship lines are already operating in connection with air transport services.

## **CPR Dominant in Canada**

Canadian air transport is being increasingly concentrated in the hands of the powerful Canadian Pacific Railway, which has acquired controlling or substantial interest in most of the private air transport companies, including Canadian Airways Ltd. and Yukon-Southern Air Transport Ltd. Just prior to the outbreak of war, I understand that C. P. R., which has extensive transpacific steamship operations, was already far along with plans to inaugurate an auxiliary air transport service between Vancouver, B. C., and the Antipodes, over which route they own a joint interest in the British subsidized steamship line, in partnership with Union Steamship Co. of New Zealand.

Thus we see that a closer relationship between ship and air transport facilities serving the same communities is already fully recognized abroad, and is actually in operation in many instances. This gives us a "preview" of

the sort of competition American transport, both air and water, may expect to face in the postwar period. The fact that both shipping and air transport in foreign countries are pretty generally nationalized does not make our problem any easier. On the contrary, we must make every effort to meet this competition in the good old-fashioned American way. This way, of course, is in consonance with the premise on which the Merchant Marine Act of 1936 and the Civil Aeronautics Act of 1938 were predicated—namely, private ownership and operation, and equal economic opportunity.

## **U. S. Law Challenged**

In the U. S., the existing law has unfortunately been interpreted as "effectively eliminating common carriers, other than air carriers, from the general air transportation field in the future." This apparently grows out of a condition of many years past where it was felt the railroads might, through ownership or acquisition, throttle paralleling steamship, truck or bus lines. It is a situation in no way comparable with that confronting offshore sea and air transportation.

This brings into consideration the fine distinction between commerce within and without our borders. The same laws designed to regulate interstate traffic and competition within given national boundaries certainly should not be invoked to regulate overseas commerce.

Governments, in dealing with air transport, quite naturally take program and direction from precedents found in the long and comprehensive record of dealing with other means of transportation and communication. The result is that almost every feature of today's governmental policies toward air transport finds in that record its analogies.

If such concepts are carried to their ultimate conclusion they will do violence and irreparable damage to the American Merchant Marine which is recognized today more than ever before as a bulwark in maintaining our national economy and in the national defense. This damage will be accomplished by the simple expedient of denying to the old, established steamship lines the privilege of participating, on a proper basis and in the public interest, in the advances of science as represented by new and improved methods of transport. This, it seems to me, is fundamentally wrong and un-American.

The job of our Merchant Marine, in addition to its service as auxiliary to the Navy, is to furnish adequate transportation service over

water. In doing this job it not only should have the right, but it actually has the duty and obligation to take full advantage of new and changing techniques. Only by so doing can it furnish shippers and passengers proper services and meet its responsibility. Its equipment has moved forward from earlier sailing ships to clippers and to modern, fast, efficient steam, electric and motor-propelled liners. It should not be deterred, but rather encouraged to avail itself of further advancement in engineering science. Only by meeting the challenge of progress can it adequately develop and discharge its proper functions and responsibilities to the public. To deny it the right to supplement its service with air transport would be analogous to denying it the right years ago to change from sail to steam.

Looking at it another way, under this interpretation of the law a steamship company, no matter how foresighted it may be, would have no means of availing itself of the advances in science and the benefits of newer forms of transportation, and if extended to its logical conclusion the ruling would prevent any form

of industry from benefiting from radical new methods of producing or merchandising its product. This is distinctly not the American concept.

Air transport, in its international aspects, is a powerful instrument of national policy. It is at once military, commercial and political, serving likewise the national aims of prestige and propaganda. It should not under any circumstances be shackled by precedents of domestic traffic regulations. It should be free to carry the flag to the remote corners of the earth under whatever conditions and combines appear to be in the public and national interest.

However the world may be organized, or disorganized, after the war, overseas commercial air transport should remain the auxiliary of military air power just as the Merchant Marine should remain the indispensable auxiliary of the Navy. And the two, representing a single concept, should be interrelated to the end that the highest military, economic and political aims of this country may be served.

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## Wright Ads Set Pace for Future



**NOWHERE IN TODAY'S** advertising has a more striking visual picture of the future of air cargo been drawn than in these ads of Wright Aeronautical Corp. (by Burke Dowling Adams Inc.). Because they appear in many publications of general circulation as well as technical and aviation journals, they are doing a yeoman's job of preparing the public for the super-air transport age that's around the corner. The most striking of all appears as AT's cover design for this issue.

# Adman's View of Tomorrow

## *How Wright Is Whetting Popular Interest in What Airlines Will Be Doing*

TEN months ago Wright Aeronautical Corp. inaugurated an advertising campaign designed to indicate the future of air transport. Some of the most striking of these far-sighted advertisements are shown here on the pages of **AIR TRANSPORTATION** along with a behind-the-scenes account of how the Wright organization in wartime is still keeping an eye focused on the future.

The Wright campaign has been running in domestic magazines and in trade and special publications abroad. It presents a dual picture—one message to hundreds of thousands of employees working in production and another to the man in the street.

To the aircraft and engine employe the campaign depicts the future of this already gigantic industry based on what leaders in the aeronautical production field are planning. To the man in the street, it points out what the advent of giant aircraft will mean in the progress of civilization as we know it—shows how transportation routes will be altered and extended; commodities be made available throughout the world; the wiping away of customary boundaries and barriers of time and the fact that U. S. products will be made available everywhere by global distribution.

Wright naturally bases an important part of future air cargo on the development of super-engines. With these engines a reality, the company's engineers are looking forward to producing engines of still greater power to hoist aloft the huge transport planes of the future.

The ads feature four-color artwork showing transports of the future loading passengers, carrying all first-class mail, taking aboard their vast hulls immense containers of freight, and being nudged into position by tugboats [see cover]. No attempt has been made actually to design these aircraft of tomorrow, and usually only portions of the airplanes are shown. But a study of their proportions reveals features which undoubtedly will be incorporated in the planes which will speed through future skies.

Streamlining has been improved in the sketches and several decks are indicated by tier after tier of portholes. Engines mounted

back in the wing drive contra-rotating propellers by means of concentric extension shafts. Otherwise aircraft have been represented only as large editions of those already familiar today.

The key of the series is one labeled, "The Power That is Changing the Earth." The copy recalls that each new age in history has been preceded by new sources of power and faster, better modes of transportation. Today, it points out, we have entered the Air Age, which will bring revolutionary changes to our commerce and our way of living. And the foundation of this new era is aircraft engine power—the power that is indeed changing the earth as we have known it.

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### **Day's Pay on Dec. 7 Is Employees' Celebration Of Pearl Harbor Date**

From the ranks of factory employes of Beech Aircraft Corp., in Wichita, Kans., came last month the germ of an idea that may spread fast.

Eighteen workers in Beechcraft's plant engineering stores department started a petition calling on all employes to donate their day's pay on Dec. 7, 1942, first anniversary of Pearl Harbor, to the U. S. Government.

Beech executives took the ball, ran with it, urged other employes to sign up, with proceeds of the offer to go half-and-half to Army Emergency Relief and Navy Relief Society. At last report, the sign-up for "slightly more than a day's pay" was approaching 100 per cent of all Beech workers.

# Donald Douglas Has A Look At Air Cargo Future

## *Terms Worldwide Air Cargo A Reality, Not A Dream Of Tomorrow, In Interview*

**DONALD W. DOUGLAS**, head of the great aircraft company that bears his name, has long held an almost unique position in the air transport world. His far-famed Douglas DC-3, standard of most U. S. domestic airlines, is known to air passengers around the world. His DC-4 is doing yeoman duty as a cargo and passenger transport for the Army. His giant experimental bomber, B-19, is the largest bomber the U. S. ever built.

Because what Douglas says is therefore news, wherever he says it, AIR TRANSPORTATION here reproduces the significant portions of a broadcast interview between him and C. B. Tibbets, president of the Los Angeles Chamber of Commerce. Part of the Mutual network's "Victory—and You!" series, presented with the aid of the U. S. Chamber of Commerce, it went on the air at 9:15 p. m. EWT on Oct. 22.

**TIBBETTS:** Isn't it true that the developments made by the aircraft industry during the war and in the name of victory will help to make the post-war world a much finer one in which to live?

**DOUGLAS:** That is true, of course. We in the aircraft industry foresee a world so changed that it will seem almost a new kind of life, after the war. We realize that even now the progress of aviation is shrinking the bounds of the world tremendously. The world will be our neighbor, and man-made wings will span oceans and continents.

**TIBBETTS:** I understand that the Army's Air Service Command under General George, is now operating cargo planes to all parts of the world and on routes which may eventually become the commercial routes of the world.

**DOUGLAS:** Yes, many of the implements of war, including a large variety of aircraft equipment and spare parts, are being sent by air to our far-flung battle fronts. This means that vitally needed materials arrive when and where required in a matter of days instead of weeks.

**TIBBETTS:** We have seen a number of articles on this subject recently, and probably many of our listeners are familiar with the extent to which air transport is expanding now. However, there are a few questions . . . as to strides that have been taken by the aircraft industry to meet present-day de-

mands. First, what was the production of the aircraft industry in the year before the war broke out?

**DOUGLAS:** In 1938 the industry produced only 100 airplanes per month. During 1939, when the war began, total production in the U. S. averaged about 200 per month.

**DOUGLAS:** Production of airplanes in 1940 increased to an average of 450 per month. For 1941 the average per month had been stepped up to 1,600, although that epic December morning found us considerably ahead of even this figure.

**TIBBETTS:** I realize that America's current production of aircraft is a figure our enemies would like to have. I know that you can't disclose it, but won't you give us some indication as to how it compares with pre-war output?



**AIR CARGO TALK?** The President listens to Donald W. Douglas, of Douglas Aircraft, as California's Governor Culbert L. Olson, and Frederic W. Conant, Douglas' manufacturing vice president, listen.

DOUGLAS: Well, early this summer President Roosevelt told the country that production was nearing 5,000 planes a month. While I cannot tell you how much the rate has increased since then, I do know that it is well above that figure. . . .

TIBBETTS: I think that gives us a good idea of how much the aircraft industry has already done to meet the war-time demands, and to show us that the industry is really just getting started. However, could you tell us what this tremendous production rate will mean to the United States at the close of the war? In other words, what use will be made of the production capacity?

DOUGLAS: Let me emphasize that our first and only consideration is the production of airplanes that will assure victory for the United Nations. But developments so far make it plain that tomorrow's world of peace will be drawn together more closely than ever before by great modern wings which will extend commerce and travel to every part of the globe.

We in the aircraft industry sincerely hope the peace which follows these years of pain and hardship will be a lasting peace. It is

our hope that aviation can knit the people of the world so closely together that a new understanding and appreciation of each other's contributions and problems will prevent future world conflicts.

To get back to your question, Mr. Tibbets, we believe that *we can help to achieve this new unity in the post-war period through the manufacture of great cargo and passenger transport planes.*

TIBBETTS: What type of planes do you feel will be given widest use after the war?

DOUGLAS: As a matter of fact, there will be thousands of planes of every size and type now flying and many new types to be developed later on. Undoubtedly there will be smaller planes for short hops; there will be thousands of civilians flying their own small planes, and the scale will be graduated up to huge super-cargo planes carrying hundreds of tons.

TIBBETTS: How much time will be required to convert from wartime production of planes to peacetime production?

DOUGLAS: That is a question, Mr. Tibbets, that only a prophet could answer with accuracy. We have not given this problem any

consideration because we are not now concerned with post-war conversion, but rather with the most effective means and methods that we can use in producing the airplanes needed right now to win this war. Many types of planes now in production can be adapted to peacetime use with very little change in facilities. For instance, *virtually all the cargo planes now being built for wartime transport purposes could be used commercially with few revisions.*

TIBBETTS: Just what are some of the wartime technological developments in the aircraft industry, and how would these developments influence post-war production?

### **Air Routes Far Shorter**

DOUGLAS: That is a question which might be answered in several ways. For example, let us take one particular phase. We of Douglas are now turning out on a large scale C-54 combat transports for the U. S. Army Air Forces. *These cargo and troop carriers have made global air transportation a reality of today instead of the dream of tomorrow.*

Global warfare has forced us to build new trade and supply routes through the sky. This is because water lanes must go around land obstructions and as a result are sometimes twice as long as corresponding air routes. If you look at a map, you will notice that the sea lanes from New York to Murmansk are a trifle under 5,000 miles, while the aerial route is about 4,000. From New York to Chungking, China, it is some 16,000 miles by land and sea. If airplanes make this same journey, they can take the Arctic route for a total of only 7,600 miles, a saving of more than half. You will see on the map that in transporting goods to all parts of the world, there are few flights that would ever require individual hops of more than 2,500 miles. Many flights could be broken into segments of 800 to 1,500 miles.

Cargo and troop-carrying airplanes manufactured by us and by others in this industry can make such flights with ease. Today they are carrying war equipment directly from production centers to the battle fronts. Tomorrow the peacetime counterparts of these airplanes, or greater ones to come will carry civilian goods directly from production areas to consumer areas.

TIBBETTS: I take it you mean that airplanes may someday be larger for long range work. Are aircraft engineers planning a plane of tomorrow?

DOUGLAS: Thinking in terms of war needs, the answer is yes. Aircraft engineers today are constantly seeking means to improve and enlarge upon present planes so that they will be able to play the best possible part in the war's future. We feel that every aeronautical advance today brings us one step closer to winning the war and one step closer to that world of peace of which I spoke. That is why we are leaving no stone unturned to make the best possible fighters, bombers and cargo planes for the war. The technical skill of our engineers and our workers will turn naturally to the needs of peace.

TIBBETTS: Could you enlarge . . . on the ideas for planes which will be used for commercial freight and passenger service after the war?

DOUGLAS: *Experience has shown it is practical and efficient to transport not only passengers but cargoes for long distances by air.* In some cases the time element alone is of the greatest importance. For instance, *someday it may prove highly economical to carry perishable fruits and vegetables by air.*

TIBBETTS: We have been talking primarily about the cargo carrying and passenger carrying planes of the world. For a moment may we digress a bit and come down to the smaller private passenger planes you mentioned earlier. Have you any ideas as to the operating cost on the average, of smaller planes for private use?

### **Is Family Plane Coming?**

DOUGLAS: That again is a question rather difficult to answer. It seems apparent now that small type airplanes can and will be manufactured in the post-war period at a cost low enough to place them within the reach of many thousands of American families. In addition, their operating costs will be so low as to make it practical for civilians to use their own planes for business and pleasure trips of a few miles. Huge airline transport planes will be used for longer journeys and for continental or inter-continental travel.

TIBBETTS: Mr. Douglas, you have given us a splendid analysis of the present and an expert insight into the future. Your views are especially timely and interesting because they come from one of the leading figures of the aircraft industry. Before we close, is there anything else you would like to say to our listeners?

Douglas: Yes, there is, Mr. Tibbets. I wish we could tell the American people every thing

we are doing to make our airplanes the finest and most effective in the world. We cannot disclose details of the work we are doing, nor can we give certain details of the equipment now being developed and produced for fighting forces of the United Nations. I know the people of the U. S. understand why we cannot discuss these things, and would not want us to do so.

But I can tell them this: *Every resource of skill and ingenuity, every machine, every ounce of material we can procure or reclaim are being thrown into this job. Our victory can only be won by faith and devotion and sacrifice. It will be won because Americans have those things and are giving of them freely. The road may be long and hard, but the blessings of peace will be all the greater. There can be a finer and a better world, and we shall help to build it.*

GOOD NEWS for cargo-by-air advocates: 21 per cent of all multi-motored aircraft built in the U. S. in the past 12 months were *transport* craft, not bombers, despite the widespread impression that cargo plane production so far represents only a minute total.



**AIR TRANSPORTATION** arrives for its debut at last month's National Foreign Trade Convention in Boston. Via air express from Chilton Co., printer, in Philadelphia come copies, received at Boston Airport by John F. Budd, publisher.

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# AIR TRANSPORTATION

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MAIL • DOMESTIC • INTERNATIONAL

JOHN F. BUDD  
*Editor and Publisher*

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## AT's Platform

AIR TRANSPORTATION has no axe to grind except the best interest of its readers. It admits that it does not know all the answers. But it dedicates itself to trying to find them.

AIR TRANSPORTATION is not anti-ship, anti-rail or anti-truck. It is pro-air, because it believes that, sooner or later, CARGO-BY-AIR will be a mighty force in both domestic and international trade—a force that no shipper can ignore—a force with which every shipper should, in his own interest, be familiar. But it believes that there will continue to be a place for all recognized means of transportation—though many things are being drastically changed during the war and may be even more drastically changed when the war is won.

AIR TRANSPORTATION will explore the whole field of CARGO-BY-AIR from the Shipper's, Manufacturer's, Forwarder's, Importer's and Exporter's standpoints, *now while the whole mighty trend is forming*. It will try to give every reader a clear background of the future, as he must face it, once the war is over. It will offer a medium for exchange of ideas on shipping speeds, handling of cargoes, terminal facilities, shipping costs and all other angles of this great trend—so that when the day of its realization has come, each reader will be better equipped for the opportunities which that day will bring.

JOHN F. BUDD,  
*Editor and Publisher*

## Think Air Thoughts!

It is not often that editors of any publication comment editorially on advertising. One reason may be that it is not often that advertising deserves it. This is one time that it does.

In a current business-paper advertisement, AMERICAN AIRLINES INC. has so well expressed some of the ideals that happen also to be our own that we think it highly proper that they be given the widest possible reading.

"Hitler knows," points out AMERICAN, in this signed advertisement over the name of President A. N. Kemp, "that our staff officers are formidable . . . that the fighting quality of our Armed Forces cannot be underestimated . . . that our production genius and vast capacity are unexcelled. Therefore, to defeat us, he can hope only for public inertia in the realm of aviation . . . the result of the failure of more of us to understand, adopt and use air transportation," the message goes on.

"We cannot dodge these facts.

"That airplanes will *increase* in military importance.

"That we Americans must gain supremacy in the *air* in order to survive upon the *earth*.

"That the records prove the new aerial strategy must *supersede* older methods.

"*That all of us must think air-thoughts in order to defeat the Axis.*"

To us of AIR TRANSPORTATION, this is the soundest kind of logic. It is the kind of logic on which we are basing this modest young enterprise of ours in which we (and a great number of readers, too, apparently) place such high hopes.

For with Air Transporter Kemp we share the belief that "as our Air Men fight, they are also drawing the blueprint of our nation's status in the postwar world. They are laying the aerial foundation, around the globe, for America's

future trade. They are designing the new pattern of our lives."

We, on our part, have started here a new publication, dedicated to CARGO-BY-AIR. We know well that CARGO-BY-AIR is today a brilliant reality, but a reality only in terms of its usefulness to war. We know equally well that, for the vast majority of our readers, CARGO-BY-AIR cannot assume reality until the war is over. But against that time (and no man knows when it will arrive), we are striving to get all our great audience of manufacturers, shippers, importers and exporters to "think air thoughts" . . . to be ready with

the know-how when CARGO-BY-AIR comes of age to serve them.

That is an extra reason why we applaud Mr. Kemp as he concludes: "As more of us become air-advocates . . . as more of us get off the ground, physically as well as mentally, we can generate the force that *will* defeat our enemies. Because, in the last analysis, the effectiveness of our Air Forces must stem from an aroused and articulate public spirit and conviction."

To the extent that we in our field can help to arouse that spirit and conviction, we here dedicate ourselves.

## LETTERS to the Editors

### *Canada's on the Map*

I have had the privilege of reading the first issue of AIR TRANSPORTATION and would like to compliment you . . . At a time when facts and figures relative to air development are most essential in planning new growth, it is decidedly encouraging to have a ready reference source such as you have provided.

Incidentally, in connection with much of the current discussion on air cargo, it seems to me that a certain attention should be given to air freight movements in northern Canada, for, until the outbreak of war, Canada was handling about 20,000,000 lbs. of freight a year and held the world's record.

Recently, the Canadian Pacific Railway acquired a nationwide north-south network of these lines and is now engaged in rendering valuable service to military movements and such special war projects as the Alaska Highway and Railroad benefit through these lines, now incorporated as Canada Pacific Air Lines, Ltd. This company has approximately 100 planes and is offering a daily scheduled service of 15,000 miles in addition to many charter services extending from Quebec to the Yukon.

The C.P.A.L. also operates six Air Observer Schools connected with the British Commonwealth Training Plan and five Engine Overhaul and Aircraft Repair Plants associated with the RCAF.

D. B. WALLACE

*Assistant to the Vice Pres.  
and General Manager  
Canadian Pacific Air Lines,  
Ltd., Montreal*

AIR TRANSPORTATION is by no means unmindful of the Paul Bunyan strides that Canadian air transport has been taking under the impetus of war demands. True it is, indeed, that observers who look only south from the U. S. for great developments in air cargo will miss an epic story of achievement that has been going on across the Canadian border. That story AIR TRANSPORTATION will be relating in future issues.—ED.

### *Congratulations, AT*

Permit me to add my congratulations to the many that you must have received on your new publication, AIR TRANSPORTATION.

AIR TRANSPORTATION, having been edited with your usual thoroughness, brings home many interesting facts that have perhaps not been thoroughly appreciated by those most affected by current modes and problems of transportation in the present and future.

Your resourcefulness and thorough knowledge of all things affecting the shipping public will make AIR TRANSPORTATION as valuable as your other publications to which my company has subscribed for many years.

H. F. ENGLAND

*Vice President*

*J. E. Bernier & Co., Inc.  
New York, N. Y.*

*To a longtime loyal reader of its sister publications, AIR TRANSPORTATION extends special thanks for this vote of confidence from one of the most prominent ocean freight and custom house brokerage organizations.—ED.*

# LETTERS to the Editors

## Congratulations, Cont'd

I want to compliment you on the product of your efforts and I feel that AIR TRANSPORTATION will serve a useful purpose.

I am enclosing my check . . . for four subscriptions. . . .

DAVID C. BEEBE  
President  
United States Aviation  
Underwriters, Inc.  
New York, N. Y.

AIR TRANSPORTATION's thanks to New Subscriber Beebe, and its hearty good wishes to Subscribers Richard S. Anderson (also of USAU), Reed M. Chambers (longtime aviation leader, now on leave from USAU as a vice president of Defense Supplies Corp. in Washington), and Albert J. Smith—all three of whom become part of AT's family through Mr. Beebe.—ED.

I have noted with interest your new publication, AIR TRANSPORTATION.

Permit me to congratulate you on the foresight of publishing a bulletin on such a timely subject.

E. M. WHITCOMB  
Acting Secretary  
United States Tariff Commission  
Washington, D. C.

The first edition of AIR TRANSPORTATION . . . is very interesting and instructive. As you already know, I inaugurated the International Air Express Service (see AT, October, 1942).

I believe the publication will furnish an excellent medium as the disseminator of information and I wish you every future success in your enterprise.

JOHN H. FAUNCE  
President  
John H. Faunce, Inc.  
International Shipping Agents  
New York, N. Y.

I want to hasten to congratulate you on your new publication, AIR TRANSPORTATION.

This subject is an extremely interesting one to me and I agree with Gill Robb Wilson, president of the National Aeronautic

Assn., that in future the air freighter will handle the less-than-carload cargo of a postwar world.

With this publication you have entered the field of air transportation at a most opportune time. I foresee the day when this publication will, in circulation, outdo that of its parent [American Import & Export Bulletin]. All good wishes in connection with it.

HOWARD B. HALL  
President  
Judson-Sheldon Corp.  
Foreign Freight Forwarders,  
Freight Brokers, Contractors  
New York, N. Y.

I have read AIR TRANSPORTATION with a great deal of interest. I think you are very farsighted in entering this field. Air cargo will be a factor to reckon with in the future. It will be helpful to have current information of a higher grade than Buck Rogers fantasy.

W. P. HEDDEN  
Director of Port Development  
The Port of New York Authority  
New York, N. Y.

## Food Tradepaper Asks To Reprint AT Story

Mr. Bishop of the Nash-Finch Co. traffic department handed me your October issue containing an article entitled "Foods Delivered by Air?"

We would like your permission to reproduce the article together with the illustrations. . . .

Retail Food Merchandiser's distribution is to retailer customers of the Nash-Finch Co., wholesale distributors of packaged and fresh foods.

R. D. BALTES  
Retail Food Merchandiser  
Minneapolis, Minn.

AIR TRANSPORTATION is delighted to extend to "Retail Food Merchandiser" the privilege of reprinting its October article on shipment of dehydrated foods by air for its 10,000-odd readers in the retail grocery field in the Northwest.—ED.



**TIRES FOR ALASKAN outposts of the U. S. Army—and big ones, at that—are the cargo being loaded aboard this cargo carrier of the Army's Air Transport Command.**

## Air Cargo & the War

### *United Aircraft Takes a Look At Progress to Date in Report To Its Thousands of Employes*

*Of the scores of articles recently written about the contributions of CARGO-BY-AIR to the war, some of the best are appearing in employe magazines published by leading companies in the aviation and air transport industries. From The Bee-Hive, the organ ably edited for United Aircraft Corp. by Norman V. Clements and Robert H. Hickey, AIR TRANSPORTATION reprints with permission this excellent report:*

NOT long ago General Douglas MacArthur flashed an urgent call for more than a ton of spare parts badly needed to whip vital war equipment into action. To this challenge there could be just one answer: "Ship them by air." Within a few days these parts, which had been hurriedly assembled on the West Coast, had arrived safely at their destination "down under".

A few days later another SOS came through the air—this time from Alaska. "Hospital burned—send emergency equipment!" A day and a half was all it took for a complete 24-bed hospital to arrive in the frozen North. Still later, news came that more than 30 cargo airplanes had made no less than 60 round trips in three days between Labrador and Greenland—hauling important war supplies.

Hardly had this report arrived than accounts of other thrilling cargo flights became public: of one Consolidated Liberator which—forsaking its prime role of bomber—had made no less than five trips between Mon-

treal and England in nine days transporting men and vital equipment; of another which left Washington on a Monday and was back on Friday from a 21,000-mile trans-Pacific errand of the same nature; of a PAA clipper

which shuttled between Brazil and Africa ten times in six days—bearing soldiers, medical supplies, oil and gasoline to a Mid-African air base.

These dramatic incidents—and there are hundreds more—offer just a glimpse of what 17 collaborating U. S. airlines are now doing under the supervision of the new U. S. Army Air Transport Command. Flying through sandstorms, fog, and monsoons—evading enemy gunfire—ATC cargo airplanes daily blaze pioneering routes in filling their new role of a vital supply link to the world's far-flung frontiers. Carrying everything from jeeps to fuel, cannon, ammunition, and ingots, these airplanes often arrive in the nick of time to perform some badly-needed service to United Nations forces on battlefields scattered throughout the globe.



**LUMBER BY AIR**—African natives load prefabricated lumber units into an Army Transport Command plane on war duty somewhere in Africa.

Even more important, though perhaps less spectacular, than these dramatic incidents are the cold performance figures turned in by ATC controlled airplanes: More than 1,000,000 lbs. of vital cargo transported each month within continental limits alone—and many thousands of pounds monthly to Alaska, England, Egypt, India, Australia, South America, the Near East and China. By ship—as convoys go—it might take five weeks for a freight shipment to reach England; by cargo plane, it's a matter of 20 hours. Sixty days to Australia is a conservative estimate for surface craft right now; 48 hours is typical air time.

Optimistic as the future of air cargo may seem to the enthusiastic, it should not be

supposed that this type of transportation will completely supplant other means of freight haulage. There are many types of equipment which cannot be shipped by air due to weight and size—a thirty-ton tank to Libya, for example. "The value of the airplane for transporting cargo," asserts a recent report of the WPB Committee on Cargo Airplanes, "lies not only in the total load which can be carried in a single flight, but in the rapidity with which the aircraft can complete its mission and be ready to start another. It can be used to rush supplies to Iceland this week; to Australia next."

Because of this flexibility, it is small wonder that the U. S. Army is currently transporting a considerable percentage of its goods by air and contemplates tremendous increases in its air cargo program. By Christmas, it is reported, the Army expects to have turned over to the airlines hundreds of cargo airplanes as fast as they are delivered from assembly lines.

The U. S. Army Air Transport Command is an outgrowth of two earlier organizations—the Air Service Command and the Ferry Command. Headed by Major-General Harold L. George, the ATC—as it is now popularly known—was created about two months ago as a means of flying thousands of soldiers and tons of war equipment at top speeds to globe-wide warfronts. A few months back, the earlier Air Service Command had paved the way for this pioneering venture by buying practically half the more than three hundred U. S. airlines' planes—keeping some for use as troop transports and leasing the remainder back to the airlines, assigning them the task of carrying Army air freight in the Western Hemisphere. At that time, foreign air freight had been the responsibility of the Ferry Command. To the ATC fell the task of combining the functions of both—"a tremendous undertaking" as General George put it to pressmen.

Seventeen U. S. airlines answered the ATC call to perform this miracle of air transportation—the same airlines which only a few months before had willingly stripped the luxurious appointments from many of their passenger planes to make them suitable for freight haulage. Operating under the direction of the ATC—but retaining their individual entities—these airlines were asked to operate over routes which were world-wide in their scope. How they answered this challenge was crisply stated by General George to reporters: "We had a job to do and we

needed the organizational genius of the airlines to do it. And their response has been 100 per cent. I always knew the airlines could be called upon. They have done a marvelous job for us."

Referring to reported rumors that the Army might later take over U. S. airlines, the General further stated: "If there is one thing the Army is not going to do it is to take over the airlines. We would rather have Army men operating over Germany instead. Although we will control all operations, the flights will be made by the airlines as separate entities."

Some day after the war is over, the full extent of the airlines' present world-wide operations can be told—and it will be a thrilling story. Right now it can be said merely that—counting combat plane deliveries—airlines operating under ATC supervision are currently flying ten times the peacetime mileage of all the world's airlines combined. And it can also be said—and facts prove it—that airline pilots are enthusiastic about their new work, however strenuous the grind. Former passenger-plane pilots accustomed to questioning the slightest departure from strict operational routine now fly over uncharted courses (often without radio), land on undeveloped airfields and sleep in makeshift quarters—and think it all just part of a day's work.

Although routes and destinations are naturally military secrets, the ATC recently made it public that TWA, American Airlines, and Northeast Airlines have been assigned to North Atlantic zones; Pan American Airways and Northwest Airlines are flying into Alaska; Western Air Lines operates routes into Canada; Braniff has been assigned Central American destinations; Eastern Air Lines is flying across the Caribbean into South America; United Airlines is spanning the Pacific; and PAA continues its established routes between the West Coast and Hawaii. Pan American is also, of course, flying to points in the Caribbean, covers the South Atlantic and flies across Africa to points eastward.

Much of the success of present ATC flight operations accrues from the airlines' own experience—a career which for years has evidenced the blazing of new air trails to the far corners of the globe. Realizing the importance of this experience, the Army—insofar as was practical—assigned routes to all participating airlines involving territories which they had either pioneered or over which they were already conducting extensive flight operations. With this solid background the ATC expects within a few months to triple the

number of planes currently in its service, to triple the monthly tonnage now carried, and to double the number of skilled pilots and maintenance men now available—in short, to realize the largest and speediest expansion in aviation history.

Where are these cargo airplanes coming from? Too many have overlooked the fact that—contrary to frequently-reported statements, the United States *has* a cargo-plane building program of no mean magnitude. Right now, there are two classifications of airplanes suitable for cargo assignments: air-



**AIRPORT SPECTATORS, bearing no close resemblance to the crowds that welcome planes at LaGuardia Field, welcome the arrival of a Pan American Clipper at an African port.**

planes originally designed as carriers, and bombers or transports which lend themselves to rapid conversion for air cargo service. War production officials have predicted that, by the end of next year, thousands of airplanes suitable for cargo haulage will have been delivered to the military. One official predicts that, late in the year, three cargo carriers will be built for every ten long-range bombers.

Three large U. S. aircraft manufacturers—Douglas, Curtiss-Wright and Consolidated—are currently producing cargo carrying planes at top speed, while a fourth—Lockheed—is gearing up for production of a four-engine 80,000 pound monoplane (Constellation) suitable for either cargo or bomber use.\*

Douglas' quantity production of air freight

\*See AIR TRANSPORTATION for October for illustrations and descriptions of most of the types.



**A HEAVY HANDFUL** is a Pratt & Whitney Wasp airplane engine. This one's being loaded aboard a Curtiss C-46 Army transport for delivery to the Army in Egypt.

ers centers about the 31-ton C-54—military version of the famed DC-4 transport—and the C-47 and C-53 which are modified versions of the twin-engined DC-3.

Curtiss-Wright's C-46 Commando—a 25-ton freighter—was originally designed as a transport, but later redesigned as a cargo carrier. Powered by two 2000-horsepower Double Wasps, these "Troopships of the Sky"—as they are sometimes called—have been declared one of the most efficient cargo-carrying airplanes in use at present. Daily they speed large quantities of troops, one or more jeeps and field artillery to critical points on the United Nations' far-flung fronts.

Consolidated is currently in production of an adaptation of its B-24 Liberator bomber which has already won outstanding recognition for its combat performance. Stripped of its armor, this fast, Twin Wasp-powered airplane offers heavy load-carrying capacity with little sacrifice in speed. The Boeing B-17 Flying Fortress, sans armor, offers similar possibilities.

Beyond this, older airplanes whose efficiency has been proved by years of domestic flying, are also taking their places in the ATC pro-

gram: the Boeing Stratoliner, the Lockheed C-56 Lodestar, the twin-engined Boeing 247 are a few examples. In the flying-boat classification, Boeing 314 clippers which have made hundreds of trans-oceanic trips for Pan American and Panagra through the years—now camouflaged—bear troops and freight to the far corners of the globe.

Thus the commercial airlines of the United States have answered the call to perform a miracle of transportation—as U. S. aircraft manufacturers, a few years back, answered the call to perform a production miracle. United Aircraft's contribution has been the Pratt & Whitney engines which power the vast majority of current air-freight transports, and the Hamilton Standard Hydromatic propellers which drive them all. In addition, the three "Flying Aces"—giant transoceanic flying boats built for American Export Airlines by Vought-Sikorsky Aircraft—have already been pressed into urgent war service. These are Twin Wasp powered and use Hamilton Standard Hydromatic propellers. Nash-Kelvinator is currently tooling up to build more boats of this type for the U. S. Navy at a new plant in the South.

# Air-Conditioning Youth for the Air-Cargo Age

## *Iowa Wesleyan Is Scene Of Study That May Shape Future Air Education*

Last month, AIR TRANSPORTATION published an address by Secretary of Commerce Jesse Jones that disclosed, to an amazing extent, the way in which air transport is being brought to the front in schools and colleges throughout the U. S. Herewith, AIR TRANSPORTATION goes farther, takes its readers on a visit to Mount Pleasant, Iowa, where Iowa Wesleyan College has launched this autumn a course designed to prepare—not aviators—but all possible students for the Air Age that's around the corner.

THOUGH Iowa Wesleyan College was 100 years old last February, many a well-informed American has never heard of it. But that Iowa Wesleyan may well earn more fame in its 101st year than in the 100 that have already passed seems more than likely. For Iowa Wesleyan is already well under way with one of the most significant and far-reaching educational projects started anywhere this year.

Other schools have taught various technical subjects in connection with aviation. Massachusetts Tech has long prided itself on its courses in aeronautical engineering, for example. Scores of flying schools have turned out qualified pilots for both civil and military aviation. But few, if any, have looked at air transportation as a subject for everybody. Iowa Wesleyan looks at it just that way.

Hence, the 30 male and three female students enrolled in I.W.C.'s Social Science 1-2, *Introduction to the Air Age*, may well be trail-blazers for all of educational America. Nor is the Iowa project limited to them and to others who

will certainly be added to the course's students during the year. For 20,000-odd students in the high schools of Iowa and two other states are already enlisted, through radio and extension-course tieups, in a companion course that follows the same general pattern.

Iowa Wesleyan, like many another college, started to go at the subject of aviation from the more or less purely technical standpoint. But that seemed, somehow, too restricted an approach. Especially to youthful Dr. Charles J. Kennedy, 31-year-old professor of social science, the time seemed ripe for a course that would interpret air transportation in terms of its importance to everybody—its present and future effects on international policies, military strategy, business and human life in general. Every possible American should know these things, Dr. Kennedy reasoned, whether or not they ever plan to work in any direct way in connection with aviation.

Most of the men students, Professor Kennedy points out, are, as a matter of fact, inclined toward technical subjects—some of them planning careers in aviation. But by

**Dr. Charles J. Kennedy**



no means all. Others expect to go into medicine, teaching, economics or the clergy. Only three have had any pre-flight instruction as such and only half of the members of the class have ever been off the ground in a plane.

Because the impact of air transportation and air power on world history is already becoming so potent, the course has called in the services of two other professors, Iowa Wesleyan's Dean Richard Karl Ellis, professor of economics and business administration, and Dr. Karel Hujer, professor of physics. With their collaboration the course goes beyond social science as such and proposes also to explore elementary pre-flight training, and air transport as a business and a career.

One major part of the course treats of "the operation of air transport companies, their future, and their relation to the Government and to citizens." With such a broad plan, it was easy for the College to arrange with Transcontinental & Western Air Inc. to provide a series of nine guest lecturers at TWA expense, many of them authorities of national note, who address not only the class at Mount Pleasant, but the entire Iowa Wesleyan student body plus the high school and allied audience of an estimated 20,000 or more throughout Iowa and adjacent Missouri and Illinois, via WSUI, of Iowa City, and KBUR, of Burlington.

So new was the idea of such a course that even an exhaustive search by Dr. Kennedy produced no sign of an adequate opening textbook. The course, therefore, revolves around lectures by the three professors, and the nine guest lecturers, and a broad range of collateral reading from books and past issues of the technical and business press.

Five films also are to be viewed as a part of the course, through TWA cooperation.

Barely had the course been announced within the college than citizens of Mount Pleasant and adjacent communities began showing their interest, too. The result has been the inauguration of an additional class for adults, on pre-flight aeronautics meeting at night.

Guest lecturers acquired for the course through the help of TWA already include L. Welch Pogue, of the Civil Aeronautics Board, who spoke on Oct. 1 not only over the two Iowa stations but over an NBC network at an earlier hour with substantially the same address; Dr. George T. Renner, professor of



**Dr. Richard K. Ellis**

geography in Columbia University (Oct. 13); Glenn L. Martin, pioneer aviator and aircraft designer and head of the great aircraft-making company that bears his name [see page 51]. Colonel T. B. Wilson, TWA's board chairman and transport chief for General MacArthur's AEF in Australia, the Oct. 29 speaker.

Other guest lecturers will include Commander D. W. Tomlinson, U. S. N., former chief engineer of TWA, who will discuss *Engineering Research and High Altitude Operation*, and Vice President V. P. Conroy, of TWA, whose subject is *Traffic Control, Rates, Schedules and Research*.

"The airlines," points out Dr. Kennedy to his students, "are not only a big business with a tremendous future, but they have developed seven times as rapidly as the railroads through the phases of pioneering, merger, regulation and stabilization."

To aid in assimilating a background of their subject, all students are urged to follow newspapers and magazines for up-to-the-minute news and information about air transport. Especially recommended is Major Al Williams' aviation column in the Scripps-Howard newspapers, as is also Major Alexander (*Victory Through Air Power*) de Seversky's Saturday night NBC broadcasts.

One of the most far-reaching implications in the whole course, in Dr. Kennedy's view, is the emphasis it is placing on knowledge of the subject on the part of students who expect to become teachers in the schools. Constantly reiterated to the students themselves is the manner in which more than 115 public school superintendents and their principals and teachers are enthusiastically following the basic plan of the course by mail and radio.

"Next spring," he points out significantly in a bulletin to his students, "not only these superintendents, but other public school men will want to employ teachers who have especially prepared themselves on education for the air age."

As is perhaps only natural, the course has begun with the rich background of air power's

influence on World War II—even back as early as Italy's "bloodless victory" over Britain in using the threat of its power to stymie any British effort in the Mediterranean to block the Italian conquest of Ethiopia seven years ago. The history of air power's rising influence on world events in the military sphere is traced on down through the fall of France, the retreat of Dunkerque and the Battle of Britain, as well as the more recent exploits of air power at sea in the Pacific.

When the course gets down to cases on air transportation itself, the students will be getting the lowdown on the now historic early days of air mail flying, beginning in 1918; the barnstorming era of air transport develop-

ment, and the long course of merger and expansion which has led to the present well integrated passenger and cargo transport system of the U. S.

Also on the program for study are the hectic days of the first Roosevelt administration when the airlines' airmail contracts were canceled and the Government attempted to fly the mails until new contracts were negotiated setting the basic pattern for today's national airline network.

Nor is even that the whole of this far-reaching program. In cooperation with the research department of *Collier's* magazine, the college is conducting an extensive survey throughout the high schools cooperating with

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CHARLES J. KENNEDY, head of the department of social science at Iowa Wesleyan, received his B.A. at Hastings (Neb.) College in 1933, M.A. from the University of Nebraska in 1936. Then going to Madison, he began work on his Ph.D. at the University of Wisconsin. Receiving it in 1940, he entered on his present duties the same year. He has published several historical works: "A History of Congregationalism in Nebraska," "The Presbyterian Church on the Wisconsin Frontier," and "A Centennial History of Iowa Wesleyan College."

RICHARD KARL ELLIS, dean of Iowa Wesleyan College and professor of economics and business administration was born at Delta, Iowa, in 1897. He entered Iowa Wesleyan College and received his B.A. in 1920. After graduating he taught for two years at Knoxville, Iowa, and was Superintendent of Schools at Kalona, Iowa, for four years. He received his Ph.D. degree from Iowa State in 1930. Since that time he has been director of the department of commerce of Arizona State Teachers College; director of the school of commerce, Xavier University, Cincinnati, and director of research and statistics, Iowa State Department of Social Welfare. His publications have included: "Business Statistics"—a text and workbook; "Workbook for Business Statistics"—to accompany text by Davies and Yoder.

KAREL HUJER, head of the department of physics at Iowa Wesleyan, was born in Czechoslovakia in 1902. His college education began in 1916 in an institution maintained by the Czech government in Turnov, Bohemia, which specialized in the study of the natural

sciences. In 1922, he matriculated at Charles University in Prague. The third year of his university studies, 1924-25, was spent at the Imperial College of Sciences of the University of London. In February, 1925, he became a fellow of the Royal Astronomical Society. In 1926 he received a traveling scholarship from the Czechoslovak Republic and came to U. S. where he studied at the University of Chicago.

He received the degree of D.Sc. from Prague University March, 1932, and began lecturing at the Masaryk Institute of Prague. In 1932-33 he embarked on a world tour which included joining the Mitchell Solar Eclipse Expedition located at Lake Memphremagog in Quebec.

Returning to Europe via Japan and Siberia he visited astronomical observatories in Tokyo and Moscow. After lecturing at the Masaryk Institute for several years he left for India to study the ancient Hindu astronomy. He was in India approximately one year during which time he not only pursued his astronomical investigations but lectured at the Hindu National University in Benares, Punjab University in Lahore, Allahabad University, Tagore's University in Shantiniketan, and others. He was also a guest of Mahatma Gandhi and the Indian National Congress.

At the time of the Munich pact he decided to become a citizen of the U. S., residing here permanently. He lived for a time in California, then became instructor of astronomy at DePaul University in Chicago in 1940. He began his duties at Iowa Wesleyan in September, 1942. He has long been interested in aviation and he has used planes for astronomical observation from above the clouds. Dr. Hujer married an American girl, Harriet Hunt, while living in Chicago in 1939.

the program to determine the interest in and attitude toward air transportation and other aviation subjects on the part of the students. Out of this may come a major national impetus in the same direction as the Iowa course.

Proud as are Professors Kennedy, Ellis and Hujer of their new college course, they are prouder still of the way they are extending its influence into the younger generation of the area from which Iowa Wesleyan will draw its students of tomorrow.

Typical of many comments about the course from public school officials is that of Superintendent C. A. Cottrell, of the Mount Pleasant schools, one of the first to tie up with the college. Says Superintendent Cottrell:

"The coming of the war has made us conscious that we have entered an air age. The startling thing about it is that we find we are totally unprepared. Our young men have not had the training necessary to fit them for the emergency in which we so suddenly find ourselves. Few high schools have as much as mentioned the subject of aeronautics.

"Educators want to do something about this condition. A few weeks ago I was called to



**Dr. Karel Hujer**

the office of Dr. Stanley B. Niles, president of Iowa Wesleyan College, to sit in on a conference with officials of TWA. They proposed a plan to help school men of the middle west in this important problem. Here in Mt. Pleasant I correlate this plan with our efforts to teach the various phases of aviation in our classes of science, social science and economics. This fine program is an invaluable aid."

Many a business organization long versed in the ways of promotion might be proud of the workmanlike manner in which the Iowa Wesleyan professors, led by Dr. Kennedy, are continuing to keep high the interest of the cooperating public school superintendents and other officials whom they consider so vital a part of the program.

Bulletins on *What Educators Can Do to Air-Condition American Youth*, question-and-answer discussion outlines, bibliographers, are constantly being mailed to the cooperating schools. The response is growing almost by the hour—and additional school systems in the area are lining up as part of the program. I.W.C. faculty members are to visit every possible cooperating school at least once during the year.

Add it all together, and it takes no vast imagination for any business man to realize that—almost before he knows it—the nation will be feeling the influence of a newly air-conscious generation—a generation that not only will want to own its own planes and fly them but will also understand and consequently demand all the benefits of shipping by air which the age of real CARGO-BY-AIR will make possible.

## **WANTED**

**EXPERIENCES**—Have you transported much material by air? What have been your experiences? When and how was the use of air transportation a distinct advantage? Have you made any unusual shipments? Any requiring unusual preparation? If so—tell us—so we may tell others through the columns of this publication.

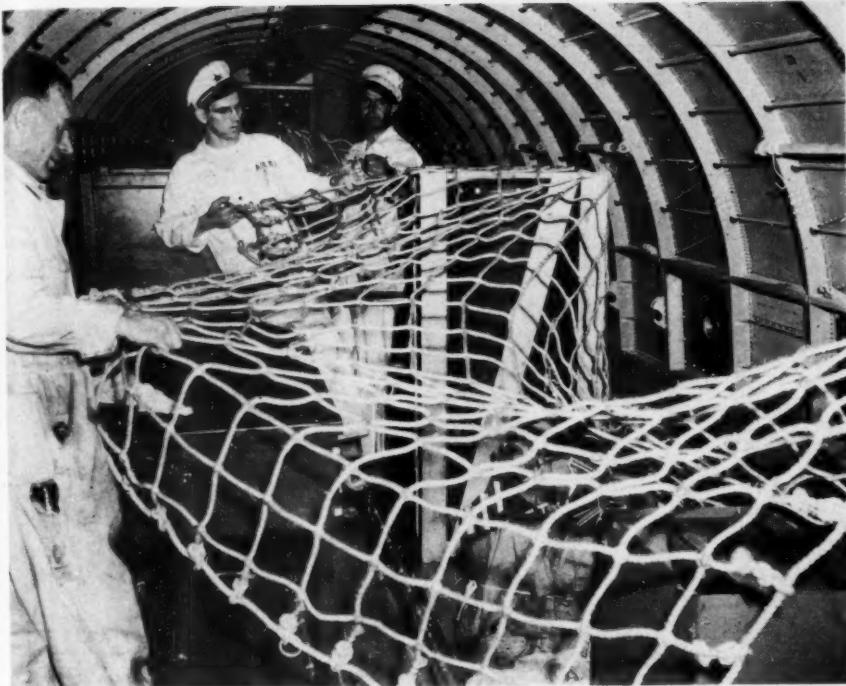
**IDEAS**—We are not seeking inventions—just ideas, such as loading and unloading cargo planes—loading platforms—improvements for Air Terminal facilities—trucks—stowing, etc. If you have any suggestions, let us pass them along.—*The Editors.*

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*Western Air Lines cargo handlers put the newly invented cargo net into operation as they lash down vital packages for flight to Alaska.*

## Rope Trick: Air Cargo Version

### *Western Air Develops Loading Aid That May Increase Plane Capacity By 33 Per Cent*

WITHOUT folderol or fanfare, a concerned west coast group of aviation mentors rolled up their sleeves and went to work on the air cargo situation. Now, after a three-month grind, it looks very much as if they have not just been talking "prop wash." Instead, they are fast earning national importance with a major contribution to the war effort and aviation's future.

Organized as the Air Cargo Association by Western Air Lines' hardworking Vice President Thomas Wolfe, the group has already issued the startling statement that the nation's air cargo could be increased 33 per cent by modernizing packaging and loading.

"What this means to vital war shipping needs no elaboration," Wolfe declares.

Members of the association, composed of research men, engineers and traffic experts



**Pretty WAL Stewardess Mary Margaret Malmsten gets a lesson in cargo packaging from cargo handler, William Young. Fresh orange juice is shipped to service men in concentrated form. It will take 14 boxes of Sunkist oranges like the one at her feet to make one carton of concentrated juice similar to the one she holds in her hands. The compact package of concentrate (seven gallons) will serve approximately 140 men on the front. Such packaging conserves vital war cargo space. (See "Foods Delivered By Air?" in October 1942 AT).**

of the major aircraft companies\* and of Western Air Lines, and military personnel of Southern California, are making such preliminary findings based on an analysis of 50,000 air cargo shipments involving over a million pounds.

James F. Hall, shipping coordinator of North American Aviation Inc.; William Shul-

\* Douglas, Lockheed, North American, Vultee, Vega, and Consolidated.

ver, Jr., assistant general traffic manager of Lockheed, and Gordon Brown, manager of contract administration, cargo and transport aircraft, of Douglas Aircraft are among the group.

Specifically, association reports indicate that approximately 18 per cent in cargo space, 10 per cent in cargo loading, and 5 per cent in size of cargo containers is now wasted because of outmoded practices.

Entirely too much "lumber" is being transported, says Chairman Wolfe, because cargo packaging is not compact. With such deficiencies corrected, he contends air cargo space would be increased one-third without additional cost in material and manpower.

Western Air Lines, under the direction of Operating Vice President Jimmy James, has already begun to do something about it.

Time, the intangible commodity which the airlines have been successfully plugging for almost two decades, is even more important now that most of the airlines are under contract to move freight for the Army Transport Command. Declares James: "If we exercise proper control over the element of time in moving freight, we are going to augment air cargo capacities substantially."

Ground loading facilities such as docks, dollies, lift trucks and the like are adequate; loading personnel are experienced and adept; and physical coordination of Army-airline operations has reached a degree of high-gear efficiency. But one of the meanest problems, along with bulky and excessive packaging, has been cargo loading, says James, backing up the association's report that there is a 10 per cent cargo loading waste.

With this problem in mind, Western Air Lines express and freight men have made an extensive study of equipment used in airplanes for cargo tiedown and have observed the handling of millions of pounds of cargo from California to Canada. The study revealed that at terminal fields where full loads are taken off the Douglas transports and new loads placed aboard, time consumed in this double operation sometimes runs as high as 3 hours. James said average figures show an hour and 40 minutes, or 50 minutes for each operation.

Of 100 minutes, only 40 are necessary for the actual moving and placing of the cargo; the other 40 minutes being consumed by the necessity for untying single ropes, removing knots, getting ropes out of the way, then tying down the new load with a multitude of single ropes of varied length, criss-crossed in all directions and tied at every possible inter-

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section. Often knots prove impossible for a hurried crew, who will cut the ropes in desperation to remove the cargo.

After much observation, Western Air Lines has built and placed in trial operation a cargo tiedown net, engineered according to many suggestions proffered by the cargo handlers themselves. The net, says WAL's James, has worked wonders in lashing down mixed and vari-shaped cargo packages, and estimates show a saving of 60 per cent of the time formerly spent in loading and unloading. Multiplying this by the hundreds of stops made daily by contract freight ships would mean many hours of time gained in transport of vital war materials.

To cover the interior of a converted DC-3 and other present cargo-carrying ships, four nets are necessary—two on each side of the center aisle. Their weight is 40 pounds each, or 160 pounds per airplane. They are built of  $\frac{3}{8}$ -inch sisal rope, with 6-inch square mesh. The nest is actually stronger than the rings to which it is tied in the ship. In use it is fastened permanently by one edge to the ribs

just above the deck, pulled over and around the load and the loose edge made secure by an ingenious fastening arrangement that applies pressure against both deck and sidewall of the ship, thereby fully insuring stationary cargo. The added weight of the nets is completely offset by the increased time advantage. Load figures show that because of various circumstances, such as size of cargo packages, a ship rarely has a 100 per cent weight load factor anyhow.

The cargo net is still in its experimental stage, but if it proves itself after a fair trial, it will be put into operation as standard airline equipment. Meanwhile, points out cargo-minded Vice President Wolfe: "Such work has one objective—to increase the efficiency of the airplane for the tremendous job of logistics now being shouldered by the aviation industry."

Because of efforts like these which probe into and expedite air cargo, Uncle Sam can rest assured that he not only has his boys on the firing lines but also those behind the lines who know how to "pass the ammunition."



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# Air Transportation's International Express and Mail Tables

Here AIR TRANSPORTATION presents its first major statistical service: a quick guide to the basic cost of cargo shipments by air to all the major international airports to which such service is now commercially operated. Readers are invited to comment on the service and its usefulness to them.

Express rates quoted are from the U. S. international airport of departure and are based on the latest prevailing tariffs. Shippers are warned, however, that they are subject to change.

Bro—Brownsville

Mia—Miami

Eo—El Paso

Nyk—New York

Fv—Fort Worth

Ste—Seattle

Lgs—Los Angeles

International Air Express is subject to two charges: one a charge per pound weight or measurements at carrier's option (200 cu. in. to the pound of weight), the other a charge per \$100 of valuation. The two must be added on any shipment to determine the cost. Neither includes the cost of insurance, which may be purchased by the shipper from the carrier or otherwise.

**Priorities:** The air carriers warn all shippers that express traffic, both U. S. Government and commercial, is so heavy that no guarantee can be given that any shipment will depart on any particular plane unless it enjoys U. S. priority. Otherwise it will depart, in relation to other shipments, in the order received at the international airport used, subject to wartime limitations. Shippers should forward cargo to international airports as far in advance of desired departure as possible and should communicate via Railway Express Agency, Inc. with the international air carrier as to whether the shipment can be forwarded without priority, as ship-

ments without priority for certain countries are, at present, under embargo. (Cargoes to be shipped via American Export Airlines, Inc. inquire at their office, Room 920, 25 Broadway, New York.)

International air carriers whose schedules and rates are included here are indicated by the letter following the symbol for the airport of departure:

A—American Airlines, Inc.;

C—Colonial Airways;

E—American Export Airlines, Inc.;

P—Pan American Airways System and affiliates;

T—Trans-Canada Air Lines.

Planes flying in and out of Miami are operated by Transportes Aereos Centro Americanos (TACA), British West Indian Airways (BWIA), Royal Dutch Airlines (KLM).

These companies operate planes on a non-scheduled basis, mainly under charter, for the transportation of personnel and equipment in the interest of hemisphere defense. It is reported that each flight by these companies is by special permit from the Civil Aeronautics Board and that their planes now carry no commercial passengers, express or cargo shipments.

Nicaro Corp., subsidiary of Freeport Sulphur Co., is operating its own plane to transport equipment and personnel between Miami and Antilla, Cuba, where it has under construction a large plant for production of nickel for the U. S. Government.

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per \$100 Value		
<b>LATIN-AMERICA LINES</b>					
Antilla, Cuba	Min P	.24	.25	Dly ex W,Sa	.10
Antofagas'a, Chile	Min P	1.26	.50	M,W,Th,Sa	.40
"	Bro P	1.34	.50	M,Tu,Th,Sa	.40
Aracaju, Brasil	Lgs P	1.95	.50	Su,M,W,F	.40
"	Mia P	1.26	.50	Su,Tu	.40
"	Bro P	1.71	.50	Su,F	.40
Aresia Branca, Brasil	Lgs P	2.28	.65	Th,Sa	.40
"	Mia P	1.24	.50	Su	.40
Arequipa, Peru	Bro P	1.56	.50	F	.40
"	Lgs P	2.13	.50	Th	.40
"	Mia P	1.23	.50	Dly ex F	.30
"	Bro P	1.26	.50	Dly ex W	.30
"	Lgs P	1.93	.50	Dly ex Tu	.30
Arica, Chile	Mia P	1.25	.50	M,W,Th,Sa	.40
"	Bro P	1.26	.50	M,Tu,Th,Sa	.40
Asuncion, Para	Lgs P	1.94	.50	Su,M,W,F	.40
"	Mia P	1.73	.50	Su,F	.40
Bahia, Brasil	Bro P	1.86	.50	W,F	.40
(See Sao Salvador)	Lgs P	2.43	.65	Tu,Th	.40
Balboa, Canal Zone	Mia P	.76	.40	Dly	.15
"	Bro P	.90	.40	Dly	.15
Baracoa, Cuba	Lgs P	1.45	.50	Dly	.15
"	Mia P	.28	.25	Dly ex Sa	.10
Barcelona, Venezuela	Mia P	.85	.40	Dly	.25
"	Bro P	1.17	.50	Dly	.25
"	Lgs P	1.78	.50	Dly	.25

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per $\frac{1}{2}$ Oz.	U. S. Gateway & Airline	RATES		Depart
		Per Lb.	Per \$100 Value				Per Lb.	Per \$100 Value	
Barranquilla, Columbia via Kingston	Mia P	.61	.40	Su,W,F	.35	David, Panama	.82	.40	Dly
via Balboa	Bro P	1.03	.40	Dly	.35	Bro P	.85	.40	Dly
	Lgs P	1.59	.50	Dly	.35	Lgs P	1.38	.50	Dly
Bauru, Brazil	Mia P	1.58	.50	Su	.40	Esmeraldas, Ecuador	.99	.40	W
	Bro P	1.71	.50	Th	.40	Bro P	1.11	.50	W
	Lgs P	2.28	.65	W	.40	Lgs P	1.71	.50	Su
Belém, Brazil (See Paraguay)	Mia P	1.65	.50	Su,W,F	.40	Florianopolis, Brazil	1.63	.50	Su,W,F
Belo-Horizonte, Brasil	Bro P	2.13	.50	M,W,F	.40	Bro P	2.11	.50	M,W,F
	Lgs P	2.60	.65	Su,Tu,Th	.40	Lgs P	2.68	.65	Su,Tu,Th
Buenos Aires, Argentina	Mia P	1.56	.50	Dly	.40	Fort de France, Martinique	.71	.40	Su,Sa
	Bro P	1.70	.50	Dly ex W	.40	Bro P	1.16	.50	M,F
	Lgs P	2.20	.65	Dly ex Tu	.40	Lgs P	1.78	.50	Su,Th
Cali, Col. via Balboa	Mia P	.89	.40	Dly	.35	Fortaleza, Brazil (Ceara)	1.23	.50	Su,Tu,Th,Sa
	Bro P	1.03	.40	Dly	.35				
	Lgs P	1.59	.50	Dly	.35	Georgetown, British Guiana	.90	.40	Su,Sa
Camaguey, Cuba	Mia P	.26	.25	Dly	.10	Bro P	1.24	.50	Th,Sa
Camocim, Brazil	Mia P	1.22	.50	Su	.40	Lgs P	1.88	.50	W,F
	Bro P	1.50	.50	F	.40	Bro P	.43	.25	Dly
	Lgs P	2.05	.60	Th	.40	Lgs P	.59	.40	Dly
Campeche, Mexico	Mia P	.41	.25	W	.10	Guantanamo, Cuba	.28	.25	Dly ex Su
	Bro P	.51	.40	Dly	.10	Guatemala City, Gua.	.74	.40	Dly
	Lgs P	1.00	.40	Dly	.10	Bro P	.53	.40	Dly
Campo Grande, Brasil	Mia P	1.48	.50	Su, W	.40	Lgs P	1.08	.50	Dly
	Bro P	1.61	.50	M,W,Sa	.40	Guayaquil, Ecuador	1.04	.40	Dly
	Lgs P	2.18	.50	Su,Tu,F	.40	Bro P	1.15	.50	Dly
Canavieiras, Brazil	Mia P	1.33	.50	Su,Tu	.40	Lgs P	1.75	.50	Dly
	Bro P	1.81	.50	Su,F	.40	Havana, Cuba	.20	.18	Dly
	Lgs P	2.38	.65	Th,Sa	.40	Hermosillo, Mexico	.77	.40	Dly
Caracas, Venezuela (See La Guaira)	Mia P	1.36	.50	Su	.40	Lgs P	.24	.25	Dly
Caravelas, Brasil	Bro P	1.85	.50	F	.40	Iguassu Falls, Brazil	.69	.50	Su,F
	Lgs P	2.41	.65	Th	.40	Bro P	1.91	.50	W,F
Caripito, Venezuela	Mia P	.89	.40	Dly	.25	Lgs P	2.48	.65	Tu,Th
	Bro P	1.19	.50	Dly	.25	Ixtapie, Mexico	.76	.40	W
	Lgs P	1.80	.50	Dly	.25	Bro P	.41	.25	M,W,F
Cayenne, Fr. Guiana	Mia P	1.02	.40	Su	.30	Lgs P	.89	.40	M,W,F
	Bro P	1.26	.50	Sa	.30	Joao Pessoa, Brazil (Cabetello)	1.25	.50	Tu
	Lgs P	1.91	.50	F	.30				
Cayo Mambi, Cuba	Mia P	.26	.25	Dly ex Sa	.10	Bro P	1.64	.50	Su
Chetumal, Mexico	Min P	.55	.40	W	.10	Lgs P	2.20	.50	Sa
	Bro P	.55	.40	M,F	.10	Mia P	.39	.25	Su,W,F
	Lgs P	1.04	.40	M,F	.10	Mia P	.81	.40	Dly
Chich Mayo, Peru	Mia P	1.11	.50	Dly	.30	Bro P	1.15	.50	Dly
	Bro P	1.19	.50	Dly	.30	Lgs P	1.75	.50	Dly
	Lgs P	1.94	.50	Dly	.30	La Paz, Bolivia	1.25	.50	Su,Tu,W,Sa
Cienfuegos, Cuba	Mia P	.28	.18	Su,W,F	.10	Bro P	1.30	.50	Su,M,Th,B
C. del Carmen, Mexico	Mia P	.45	.25	W	.10	Lgs P	1.95	.50	Su,W,Th,Sa
	Bro P	.47	.40	Dly	.10	Mia P	1.18	.50	Dly
	Lgs P	.94	.40	Dly	.10	Bro P	1.24	.50	Dly
Ciudad Trujillo, D. R.	Mia P	.45	.25	Dly	.10	Lgs P	1.88	.50	Dly
Cochabamba, Bolivia	Mia P	1.26	.50	W,Sa	.35	Loja, Ecuador	1.08	.50	Su,W,F
	Bro P	1.35	.50	M,Th	.35	Maceio, Brazil	1.26	.50	Su,Tu
	Lgs P	1.95	.50	Su,W	.35	Bro P	1.68	.50	Su,F
Concepcion, Bolivia	Mia P	1.31	.50	Sa	.35	Lgs P	2.24	.50	Th,Sa
	Bro P	1.45	.50	Th	.35	Managua, Nicaragua	.86	.40	Dly
	Lgs P	2.03	.60	W	.35	Bro P	.71	.40	Dly
Cordoba, Argentina	Mia P	1.49	.50	Dly ex F	.40	Lgs P	1.22	.50	Dly
	Bro P	1.63	.50	Dly ex W	.40	Manaos, Brazil	1.24	.50	W,Sa
	Lgs P	2.19	.60	Dly ex Tu	.40	Bro P	1.56	.50	M,Th
Coro, Venezuela (via Barranquilla)	Mia P	.74	.40	Su,W	.25	Lgs P	2.13	.60	Su,W
	Bro P	1.11	.50	Dly	.25	Mia P	1.03	.40	W,F
	Lgs P	1.69	.50	Dly	.25	Bro P	1.14	.50	Th,Sa
Coro, Venezuela (via Maracaibo)	Mia P	.74	.40	Tu,Sa	.25	Lgs P	1.74	.50	W,F
Corumba, Brasil	Mia P	1.41	.50	Su, W	.40	Manzanillo, Cuba	.26	.25	Dly ex Su
	Bro P	1.56	.50	Tu,Sa	.40	Maracaibo, Venezuela (via Barranquilla)	.69	.40	Su,W
	Lgs P	2.13	.50	M,F	.40	Bro P	1.08	.50	Dly
Cristobal, Canal Zone	Mia P	.76	.40	Dly	.15	Lgs P	1.66	.50	Dly
	Bro P	.92	.40	Dly	.15	Mia P	.69	.40	Tu,Sa
	Lgs P	1.46	.50	Dly	.15	Maracibo, Venezuela (direct)			
Cuenca, Ecuador	Mia P	1.06	.40	Su,W,F	.80	Bro P	.57	.40	Dly
	Bro P	1.15	.50	M,W,F	.80	Lgs P	.45	.25	Dly
	Lgs P	1.76	.50	Su,Tu,Th	.80	Mia P	1.06	.40	Su,W,F
Ourityba, Brazil (Via Rio)	Mia P	1.80	.50	Su,W,F	.40	Medellin, Colombia (via Boquilla)			
	Bro P	2.00	.50	M,W,Sa	.40	Medellin, Colombia (via Balboa)			
	Lgs P	2.59	.65	Su,Tu,E	.40	Bro P	1.10	.50	M,Th,F

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per 1/2 Oz.	Destination	U. S. Gateway & Airline	RATES		Depart	Mail per 1/2 Oz.
		Per Lb.	Per \$100 Value					Per Lb.	Per \$100 Value		
Mendoza, Argentina	Mia P	1.41	.50	M, W, Th, Sa	.40	Porto Alegre, Brazil	Mia P	1.70	.50	Su, W, F	.40
"	Bro P	1.55	.50	M, Tu, Th, Sa	.40	"	Bro P	2.19	.50	M, W, Sa	.40
"	Lgs P	2.11	.50	Su, M, W	.40	Puerto Suarez, Bolivia	Lgs P	2.75	.65	Su, Tu, F	.40
Merida, Mexico	Mia P	.37	.25	W	.10	"	Mia P	1.41	.50	M, Th	.35
"	Bro P	.55	.40	Dly	.10	"	Bro P	1.56	.50	Tu, Sa	.35
"	Lgs P	1.04	.40	Dly	.10	Preston, Cuba	Lgs P	2.13	.50	M, F	.35
Mexicali, Mexico	Lgs P	.20	.18	Dly	.10	"	Mia P	.24	.25	Dly ex Sa	.10
Mexico City, Mexico	Mia P	.69	.40	W	.10	Quito, Ecuador	Mia P	.97	.40	Dly	.30
"	Bro P	.26	.25	Dly	.10	"	Bro P	1.09	.50	Dly	.30
"	Lgs P	.69	.40	Dly	.10	Recife, Brazil	Lgs P	1.68	.50	Dly	.30
"	Fv A	.42	.25	Dly	.10	"	Mia P	1.26	.50	Su, Tu, Th, Sa	.40
"	Eo A	.42	.25	Dly	.10	"	Bro P	1.65	.50	Su, Tu, Th, F	.40
Minatitlan, Mexico	Mia P	.53	.40	W	.10	Rio de Janeiro	Lgs P	2.21	.50	M, W, Th, Sa	.40
"	Bro P	.39	.25	Dly	.10	"	Mia P	1.50	.50	Su, W, F	.40
"	Lgs P	.86	.40	Dly	.10	"	Bro P	1.98	.50	M, W, F	.40
Monterrey, Mexico	Fv A	.34	.25	Dly	.10	"	Lgs P	2.54	.65	Su, Tu, Th	.40
"	Eo A	.34	.25	Dly	.10	Robore, Bolivia	Mia P	1.38	.50	Tb	.35
"	Lgs A			Dly	.10	"	Bro P	1.51	.50	Tu	.35
Montevideo, Uruguay*						"	Lgs P	2.08	.50	M	.35
(See notes below)						Salinas, Ecuador	Mia P	1.05	.40	Tb, Sa	.30
Nassau, Bahamas	Mia P	.20	.18	Dly ex Su, W	.10	"	Bro P	1.15	.50	Tu, Th	.30
Natal, Brazil	Mia P	1.25	.50	Su, Tu, Th, Sa	.40	"	Lgs P	1.75	.50	M, W	.30
"	Bro P	1.61	.50	Su, Tu, Th, F	.40	Salta, Argentina	Mia P	1.30	.50	Su, Tu	.40
"	Lgs P	2.18	.50	M, W, Th, Sa	.40	"	Bro P	1.45	.50	Su, F	.40
Orouru, Bolivia	Mia P	1.26	.50	Su, Tu, Th	.35	"	Lgs P	2.03	.50	Th, Sa	.40
"	Bro P	1.33	.50	Su, Tu, F, Sa	.35	San Ignacio, Bolivia	Mia P	1.33	.50	Th	.35
"	Lgs P	1.95	.50	M, Th, F, Sa	.35	"	Bro P	1.48	.50	Tu	.35
Panama City, Panama						"	Lgs P	2.04	.50	M	.35
(See Balboa, C. Z.)						San Jose, Bolivia	Mia P	1.35	.50	Th	.35
Para (Belem), Brazil	Mia P	1.13	.50	Dly ex M	.40	"	Bro P	1.50	.50	Tu	.35
"	Bro P	1.34	.50	Dly ex Sa	.40	"	Lgs P	2.08	.50	M	.35
"	Lgs P	1.95	.50	Dly ex F	.40	San Jose, Costa Rica	Mia P	.89	.40	Dly	.15
Paramaribo, Sur	Mia P	.97	.40	Dly ex Su	.30	"	Bro P	.76	.40	Dly	.15
"	Bro P	1.25	.50	Dly ex F	.30	"	Lgs P	1.31	.50	Dly	.15
"	Lgs P	1.90	.50	Dly ex Th	.30	San Juan, Puerto Rico	Mia P	.53	.40	Dly	.10
Parnahyba, Brasil	Mia P	1.21	.50	Su	.40	San Salvador, El Salvador	Mia P	.79	.40	Dly	.12
"	Bro P	1.48	.50	F	.40	"	Bro P	.61	.40	Dly	.12
"	Lgs P	2.04	.50	Th	.40	"	Lgs P	1.14	.50	Dly	.12
Point a Pitre, Guadeloupe	Mia P	.66	.40	Su, Sa	.15	Santa Cruz, Bolivia	Mia P	1.28	.50	M, Th	.35
"	Bro P	1.14	.50	M, F	.15	"	Bro P	1.43	.50	Tu, Sa	.35
"	Lgs P	1.74	.50	Su, Th	.15	"	Lgs P	1.99	.50	M, F	.35
Port au Prince, Haiti	Mia P	.37	.25	Dly	.10	Santiago, Chile	Mia P	1.38	.50	M, W, Th, Sa	.40
Port of Spain, Trinidad	Mia P	.79	.40	Dly ex Su	.15	"	Bro P	1.51	.50	M, Tu, Th, Sa	.40
"	Bro P	1.20	.50	Dly	.15	"	Lgs P	2.08	.50	Su, M, W, F	.40
"	Lgs P	1.81	.50	Dly	.15	"	Mia P	.26	.25	Dly ex Su	.10
* Shipments for Montevideo must be assessed rates to Buenos Aires plus 55¢ per 2 lbs. or fraction thereof (min. 55¢) for forwarding by other carrier to Montevideo, plus \$1.10 per shipment transfer charge at Buenos Aires.											

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Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per \$100 Value		
Sao Paulo, Brazil.....	Mia P	1.55	.50	Su,W,F	40
(via Rio)	Bro P	2.04	.50	M,W,Sa	40
"	Lgs P	2.60	.65	Su,Tu,F	40
Sao Salvador, Brazil.....	Mia P	1.28	.50	Su,Tu,Th,Sa	40
(Bahia)	Bro P	1.76	.50	Su,Tu,Th,F	40
"	Lgs P	2.33	.65	M,W,Th,Sa	40
St. Johns, Antigua, British West Indies.....	Mia P	.64	.40	Sa,Su	15
"	Bro P	1.13	.50	M,Sa	15
"	Lgs P	1.73	.50	S,F	15
St. Thomas, V. I.....	Mia P	.57	.40	Sa,Su	10
"	Bro P	1.10	.50	M,F	10
"	Lgs P	1.68	.50	Su,Th	10
Talara, Peru.....	Mia P	1.08	.50	Dly	30
"	Bro P	1.17	.50	Dly	30
"	Lgs P	1.79	.50	Dly	30
Tampico, Mexico.....	Lgs P	.81	.40	Dly	10
Tapachula, Mexico.....	Bro P	.53	.40	Dly	10
"	Lgs P	1.02	.40	Dly	10
Tegucigalpa, Honduras.....	Mia P	.82	.40	Dly	12
"	Bro P	.68	.40	Dly	12
"	Lgs P	1.18	.50	Dly	12
Tres Lagoas, Brazil.....	Mia P	1.53	.50	Su	40
"	Bro P	1.66	.50	We	40
"	Lgs P	2.23	.50	Tu	40
Tucuman, Argentina.....	Mia P	1.34	.50	Su,Tu	40
"	Bro P	1.49	.50	Su,F	40
"	Lgs P	2.05	.50	Th,Sa	40
Turbo, Columbia.....	Mia P	1.06	.40	Su,W,F	40
(via Barranquilla)	Bro P	1.06	.40	Tu,Sa	40
Turbo, Columbia.....	Lgs P	1.10	.50	M,Th,F	40
(via Balboa, C. Z.)	Bro P	1.65	.50	Su,W,Th	40
Tuxpan, Mexico.....	Bro P	.20	.18	Dly	10
"	Lgs P	.83	.40	Dly	10
Uyuni, Bolivia.....	Mia P	1.26	.50	Su,Tu	35
"	Bro P	1.38	.50	Su,F	35
Veracruz, Mexico.....	Lgs P	1.95	.50	Th,Sa	35
"	Mia P	.57	.40	We	10
"	Bro P	.33	.25	Dly	10
"	Lgs P	.79	.40	Dly	10
Victoria, Brazil.....	Mia P	1.41	.50	Su,Tu	40
"	Bro P	1.90	.50	Su,F	40
"	Lgs P	2.46	.65	Th,Sa	40
Villahermosa, Mexico.....	Mia P	.49	.40	We	10
"	Bro P	.43	.25	Dly	10
"	Lgs P	.90	.40	Dly	10

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per \$100 Value		
Botwood, Newfoundland	Nyk P	.81	.40	Twice wk	15
England via Foynes*	Nyk E	(Rates on Application)		30	
"	Nyk P	(Rates on Application)		30	
Foynes, Eire.....	Nyk P	1.78	.50	Twice wk	30
"	Nyk E	2.00	.50	30	
Hamilton, Bermuda.....	Nyk P	.55	.25	Twice wk	10
Horta, Azores.....	Nyk P	1.70	.40	Once 2 wks	30
Lisbon, Portugal.....	Nyk P	2.00	.50	Once 2 wks	30
Scotland via Foynes*	Nyk E	(Rates on Application)		30	
"	Nyk P	(Rates on Application)		30	
Shediac, N. B.....	Nyk P	.51	.25	Twice wk	6
Wales via Foynes*	Nyk E	(Rates on Application)		30	
"	Nyk P	(Rates on Application)		30	

## ATLANTIC LINES

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per \$100 Value		
Bethel, Alaska.....	Ste P	1.11	.40	Schedules not published	.06
Fairbanks, "	Ste P	.90	.40	"	.06
Flat, "	Ste P	1.05	.40	"	.06
Galena, "	Ste P	1.00	.40	Nov. 1-Apr. 30	.06
Golovin, "	Ste P	1.08	.40	Nov. 1-Apr. 30	.06
Hot Springs, "	Ste P	.92	.40	Nov. 1-Apr. 30	.06
Juneau, "	Ste P	.56	.25	Schedules not published	.06
McGrath, "	Ste P	1.00	.40	"	.06
Nome, "	Ste P	1.11	.40	"	.06
Nulato, "	Ste P	1.03	.40	Nov. 1-Apr. 30	.06
Ophir, "	Ste P	1.03	.40	Schedules not published	.06
Ruby, "	Ste P	.99	.40	"	.06
Tanana, "	Ste P	.95	.40	Nov. 1-Apr. 30	.06
Whitehorse, Canada.....	Ste P	.66	.40	Schedules not published	.06

## ALASKA LINES

Destination	U. S. Gateway & Airline	RATES		Depart	Mail per ½ Oz.
		Per Lb.	Per \$100 Value		
Toronto, Canada.....	Nyk A	.16	†	Dly	10
"	Nyk T	.16	†	Dly	10
Montreal, Canada.....	Nyk C	.12	†	Dly	10

\* British Overseas Airways Corp. carries from Foynes, Ireland, to destinations in England, Scotland, and Wales.

† Canadian air express is carried on the same basis as air express within the U. S.: \$50 declared value free; excess charged at 10 cent per \$100 or fraction thereof.

## Domestic Air Express Rate Schedule

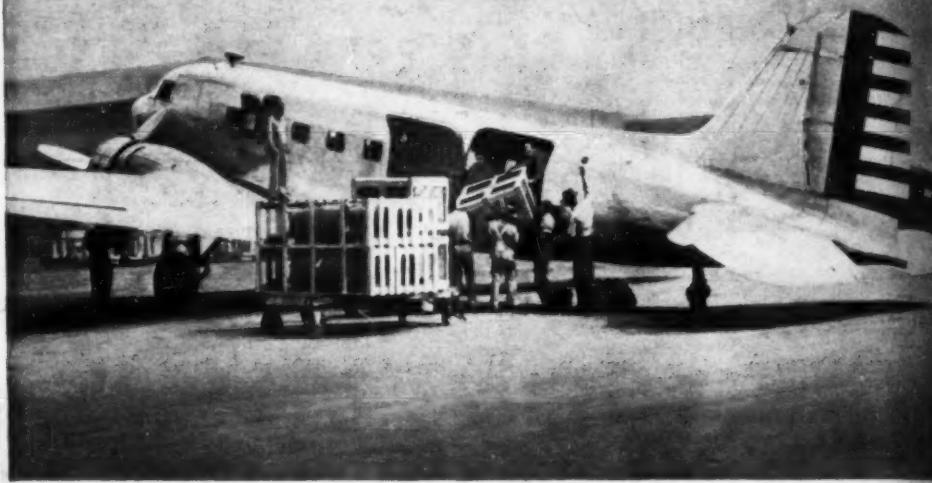
A handy table for finding approximate

shipping costs

Total cost between addresses in airport cities—No extras

Distances in Air Miles	WEIGHT IN POUNDS											
	1	5	10	25	50	100	200	250	350	500	750	1000
200.....	\$1.00	\$1.12	\$1.32	\$2.00	\$4.00	\$8.00	\$16.00	\$20.00	\$28.00	\$40.00	\$60.00	\$80.00
400.....	1.00	1.44	2.04	4.00	8.00	16.00	32.00	40.00	56.00	80.00	120.00	160.00
600.....	1.00	1.76	2.76	6.00	12.00	24.00	48.00	60.00	84.00	120.00	180.00	240.00
800.....	1.00	2.08	3.48	8.00	16.00	32.00	64.00	80.00	112.00	160.00	240.00	320.00
1000.....	1.00	2.40	4.20	10.00	20.00	40.00	80.00	100.00	140.00	200.00	300.00	400.00
1500.....	1.00	3.20	6.00	15.00	30.00	60.00	120.00	150.00	210.00	300.00	450.00	600.00
2000.....	1.00	4.00	8.00	20.00	40.00	80.00	160.00	200.00	280.00	400.00	600.00	800.00
2500.....	1.00	4.80	9.60	24.00	48.00	96.00	192.00	240.00	336.00	480.00	720.00	960.00

# Highway in the Clouds



DAY IN and day out many of our great factories are working to spin a web that will reach around the world—a super highway thru the clouds—to carry valuable cargo in "flying boxcars." Each succeeding day more cargo will be sent via these air lanes.

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